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# DISINFECTION

AND

## THE PREVENTION OF DISEASE.

BY

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“The sanitary reformer will refuse to entertain the mysterious fatalist notions that cholera, fever, and other epidemics are of telluric or meteoric origin. These would paralyse all action. He will refuse his assent to a doctrine which traces to an aqueous vehicle all epidemic poisons. He knows the imperative necessity for keeping pure the air as well as the water. He wants, what experience has amply proved to be necessary, a reasonable control over all the surroundings—if we may so translate our neighbours' word, “*entourage*”—of the citizen. The soil must be clean, the water must be pure, the air must be free. Solid food as well as drink must be good in quality, and varied in kind.”—*Lancet*, Nov. 23, 1861.

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ALTHOUGH it is now universally admitted, that the main objects of sanitary economy are attainable by due regard to cleanliness, ventilation, and good drainage, it can hardly be denied that so long as infectious diseases exist, and unwholesome accumulations of more or less offensive decomposing matters are to be met with, those important and primary hygienic measures may be aided and promoted by the proper use of substances which can be shown to be truly possessed of disinfecting properties. The sanitary teachings of late years, however, by dwelling on the fact that disinfection would be less frequently called for if the laws of health were duly observed, have had the effect of causing the importance of disinfecting agents to be considerably underestimated. On this principle, it might be argued that police and military establishments are not deserving of support, because if the laws of personal and national morality were obeyed, they would not be required. But as the existence of crime and misconduct on the part of individuals and nations, brings home to us, on practical grounds, the necessity for repressive and defensive precautions, in the shape of police and military forces, so ought the recognition of the presence of infection in any society practically to demonstrate the necessity of disinfecting measures. To confine our attention to the mere combating of infectious influences after their development, without attempting to control the conditions in which they originate,

would no doubt be both foolish and inadequate, but it is equally so, when cases of positive and almost palpable infection are met with, entirely to ignore the advantages which may be derived from disinfecting agents. Yet this seems to have been a common result of modern investigations respecting the primary sources of infectious diseases. The development *de novo* of such affections would appear at the present day, to a very great extent, to have absorbed attention, to the exclusion of the means of neutralizing the peculiar products by which they are characterized. This was remarkably exemplified by the way in which the medical officers at Liverpool met the outbreak of malignant fever which occurred at that port in March, 1861, from the arrival of the Egyptian frigate *Scheah Gehald*. The crew of that vessel were described by Dr. Cameron as "saturated with poisonous miasma, filthy in the extreme, and their bodies and garments emitting the most offensive effluvia," yet no measures of disinfection beyond the ordinary bath, were adopted to counteract their foul state, and the infection, which the employment of proper means might have destroyed, was allowed to communicate itself to the bath and hospital attendants, and caused the loss of several valuable lives.

However perfectly the sanitary arrangements of a community may be carried out, they must still be subservient to those great processes of purification which are constantly in operation in the atmosphere. The idea of artificial disinfection by chemical means is, therefore, not opposed to the operations of nature, since the action of the air in overcoming the foulness which is inseparable from the congregating together of men in dwellings, is explainable only by the laws of chemistry. The atmosphere is an admixture of chemical substances, whose influence on organized beings, whether in its constructive or destructive effects, is of a truly chemical nature. In studying, consequently, the best means of seconding nature in her efforts for disposing of the waste products of organic life, we have only to copy her admirable processes, in order to arrive at the most perfect results.

The researches of recent times on the composition and economy of the atmosphere, point clearly to oxygen, and especially to active or ozonic oxygen, as the chief means by which natural disinfection is accomplished. In nature, this essential and preponderating element fully suffices for the purification of every kind of matter, whether in the air or on the surface of the earth. If we could then only obtain abundant artificial supplies of oxygen in the active state, we should be provided with a certain means of meeting every case demanding the

employment of disinfecting measures, because we should have at command the very agent employed by nature in her great purifying operations.

There are two classes of circumstances in which the auxiliary aid of chemical disinfectants, is very frequently required to overcome unwholesome influences, namely :

Against the deleterious emanations which generally proceed from the bodies of men, especially when labouring under disease, and more particularly when such disease is of a contagious nature.

Against the taint of organic decomposition.

In both these cases, the chemical objects to be kept in view are substantially the same. The infective material in either case is supposed to be an organic compound, declining by successive transformations, from a highly complex form, towards that state of ultimate chemical repose, which belongs to complete oxidation. Its dangerous qualities are dependent on its condition while passing through these steps of transition, during which it acts after the manner of a ferment.

This supposition offers to the chemist, an apparent choice between two modes of procedure for disinfection: either he may restrain the organic compound, as long as possible, from changing its first state; or he may hasten, as quickly as possible, its transition to the last. Disinfectants are accordingly of two classes.

1. Those which, by fixing the organic matter in a form unfavourable to oxidation, thus reduce to the utmost its tendency to undergo chemical change, and which are more properly designated *antiseptics*.

2. Those which more or less rapidly break up the organic matter, by promoting its oxidation and conversion into unputrefiable products, and which alone are properly designated *true disinfectants*.

Where cases requiring disinfecting measures are characterized by offensive smells, the materials employed against them are often spoken of as *deodorizers*, which word has thus come to be popularly used as equivalent to disinfectants. This is an error to be carefully guarded against, for there is no proof that the specific power of producing fever, small-pox, or cholera, is necessarily associated with any odorous matter. Sulphuretted or phosphoretted hydrogen may be smelt in places where there is no power of infection; while in others, the mere absence or destruction of such odours, is not sufficient security against infection. The distinction between *mere deodorizers* and *true disinfectants* must not be lost sight of, especially as regards the offensive odours which arise from house refuse and other putrid

accumulations, since, however useful the former may be for temporary objects, they can seldom do more than palliate or disguise an evil.

The labours of modern chemists on the subject of disinfectants, have resulted in the introduction of a great variety of substances, which, though too commonly and indiscriminately styled antiseptics or disinfectants, according merely to the nature of the immediate object in view, may be classed as follows:

1. **Antiseptics.**—These substances have no oxidizing power; they act by retarding decomposition. Sulphurous acid and its soluble salts, such as sulphites of soda and magnesia, many metallic compounds, as for instance, chloride of zinc, perchlorides of iron and manganese, nitrate of lead, &c., essential oils, creasote, carbolic acid, and compositions containing tar and other products of the distillation of coal, are the principal antiseptics in use. Though well qualified to restrain decomposing organic matters, they are devoid of neutralizing action on the products of decomposition.

2. **True Disinfectants.**—Substances of this class are all more or less oxidizing agents, whose action depends on the property they possess of hastening the process of decomposition through its intermediate offensive stages to its ultimate results, which are inoffensive. The greater and more direct their oxidizing power, the more decided will be their disinfecting effects. Up to the time of the discovery by the author of the disinfecting properties of the alkaline permanganates, and their introduction to the public in the form of "Condy's Patent Fluid or Natural Disinfectant," the substances in use belonging to this class were, for the most part, indirect oxidizers only. These were chlorine, hypochlorite of lime (chloride of lime) and hypochlorite of soda, quicklime, charcoal, and nitrous acid, the two latter alone containing any available oxygen.

Nitrous acid, as a vehicle of large quantities of oxygen, with which it readily parts, is by far the most advantageous of those substances, and of all disinfecting fumigations is perhaps the best. On coming in contact with offensive organic matters, it readily converts them into inoffensive products, being disposed to combine with every one of their elements, whereas chlorine only unites with hydrogen and in the absence of moisture, from which it can liberate oxygen, is a feeble neutralizer of the other elements of organic substances, such as carbon, nitrogen, sulphur, phosphorus, &c. It was not without some show of reason that Dr. Carmichael Smith was rewarded last century by a Parliamentary grant of £5,000 for the introduction of this substance as a disinfectant, and it might,

perhaps, have been better for the community if his system of disinfection had not been superseded by the almost exclusive use of chlorine. But, doubtless, experience showed that nitrous acid fumes possessed inconveniences, such as their density, which does not permit them freely to diffuse themselves in the atmosphere, and when once diffused renders them not easy of displacement. When to these objections is added the irritating and corrosive nature of their effects on the respiratory organs and most household articles, we can understand why Dr. Smith's favourite substance never came into general use. The high opinion, however, entertained by Liebig of the merits of nitrous acid as a disinfectant, is sufficient to prove that, for some objects, this substance deserves more attention than it has received. Quite recently, Dr. de Luna, of Madrid, has revived the subject of disinfection by means of nitrous fumes in the less objectionable form of hyponitrous acid, and has adduced several important facts tending to show its great value in counteracting the deleterious properties of putrefactive vapours.

Although of a simple elementary nature and destitute of oxygen as a chemical constituent, charcoal, owing to its peculiar structure, in common with other porous bodies, has the power of absorbing and condensing various gases within its pores, and of bringing them within the sphere of their mutual attractions, whereupon chemical combination ensues. In this way, noxious vapours simultaneously condensed with atmospheric air, may be brought within the influence of its oxygen, and so destroyed. The slowness of its action, the inconvenience of its solid form and dirtiness, together with the circumstance of its power being very materially diminished by saturation with moisture, render charcoal of limited avail in practical disinfection, but the elucidation of the manner in which it acts as a disinfectant, for which we are chiefly indebted to Dr. John Stenhouse, has been of great use in confirming previous observations on the subject of the part performed by oxygen in artificial, as well as in natural, processes of purification.

Quicklime is an indirect oxidising agent, whose action is due to its caustic nature. The avidity with which it seeks to satisfy this quality and pass into the state of a neutral salt, induces an organic body in contact with lime to absorb oxygen from the air, and to form those compounds with which lime readily enters into combination. The carbon of the organic body is ultimately converted into carbonic acid, its hydrogen into water, and its nitrogen into nitric acid.

Chlorine and the chlorous gases evolved from the hypo-

chlorites, in like manner, are powerful oxidizing agents of an indirect character. Their efficacy is owing to their affinity for hydrogen. By withdrawing hydrogen from an organic compound, the remaining elements re-arrange themselves under the influence of chemical force, and so are disposed to become oxidized. Effective as the chlorous substances undoubtedly are, they are open to serious objections, on account of their irritating and corrosive action on animal and vegetable life.

The alkaline manganates and permanganates are direct oxidizing disinfectants, their prominent ingredient being active oxygen, the very agent by which, as we have seen, all natural disinfection is effected. For this reason, their action approaches as nearly as possible to that exerted by the atmosphere on putrescible matter. They not only give rise to processes of purification, which are identical in their nature with those brought into operation by nature, but, as it were, continue and advance them to a more rapid consummation, and when applied to decomposing or oxidizable putrescible substances, destroy the poisonous products in their birth and prevent their development.

The advantages possessed by these preparations over every other so-called disinfectant, may be thus summed up: They have no smell whatever of their own, give off no odorous gas during their operation, and, when diluted for use, are devoid of perceptible action except on offensive matter; they are thoroughly efficient and permanent in their effects, disinfecting as well as deodorizing; perfectly safe to use, because not poisonous; not mistakeable for other liquids on account of their characteristic colours, whereas all other fluid disinfectants are colourless; capable of being regulated as to the quantities required, by the depth of colour of the dilution; applicable in a great number of cases for which no other disinfectant can be employed.

It was somewhat in the above terms, under date 22nd January, 1857, two years after discovering the disinfecting effects of the alkaline manganates and permanganates, that, fortified by the report of Dr. Hofmann, which will be found further on, I ushered to the public my Patent Disinfecting Fluid. Chemists and medical men were not, at that time, in general, prepared, *à priori*, to admit the practical applicability to disinfection of the action exerted by the alkaline permanganates on organic matter, and the few who were ready to concede the probable efficacy of those substances as disinfectants, did not believe that they could be produced at a price sufficiently low to enable them to come into general use. So striking, however, were the results obtained on trial of their

powers, that in a very short space of time the whole English scientific world may be said to have adhered to my proposition. As regards the obstacle of costliness, that has been got over by close attention to manufacturing details, and the peculiar resources of a long-established and extensive chemical factory, in which a great variety of processes are conducted, and many residuary matters made available.

Originally experimented on merely as ordinary disinfectants, the alkaline permanganates were soon found by me, from experience, to be applicable to a great variety of objects in domestic economy, personal hygiene, and the management of many of the diseases which affect animals and plants. As might have been expected of a thing founded on sound and simple principles, the sphere of usefulness of these substances appeared to extend in proportion as new applications of them were tested and approved of. The part played in nature by oxygen in its peculiar condition of ozone, may almost be considered as hardly more boundless than that which nascent oxygen, produced by artificial means in the ozonic state, can be made to perform, in connection with the numerous sanitary requirements of civilized life.

To meet the wants arising from some of those applications, I have produced and brought out several absolutely pure preparations of the permanganates,\* which have since taken their place as agents of recognized utility in the healing art, and for promoting the purity and invigoration of the body. The introduction of officinal solutions of those salts, into the forthcoming new British Pharmacopœia, has conferred on them the sanction of our highest medical authorities.

Notwithstanding the many uses which have been found for those valuable agents, and the numerous experienced observers whose attention, since the introduction of Condy's Fluid, has been directed to their remarkable properties, much remains to be done, as regards their practical employment for purposes not usually considered to fall within the province of disinfectants. Some most important applications of this class, such as the cure of the blight of the potato and the vine, and the treatment of the affections of domestic animals, though hitherto tried on but a limited scale, have been attended with such marked success as to leave the conviction, that the alkaline permanganates are capable of exercising a most remarkable control over the sanitary conditions of the entire range of organized beings. Considering the results already obtained, I am almost tempted to predict, that the time will come when, as promoters

\* Liquor Potassæ, vel Calcis, vel Magnesiæ, vel lithiæ Permanganatis (Condy), and Condy's Patent Ozonized Water.

of physical purity in general, the alkaline permanganates will be as universally used in civilized countries, as is soap, at the present day, for the purposes of ordinary cleanliness.

The following independent evidence and reports, not only furnish a very fair array of scientific testimony in favour of the efficacy of my Patent Fluid as a purifying agent, but present, as it were, a history of the development of its extended application among the public, and a reliable account of its mode of action and properties.

## I.

## OZONE THE PURIFYING AGENT OF NATURE.

Ozone is the agent by which nature maintains the purity of the air we breathe, and the sanitary condition of the earth we inhabit.

“Schönbein’s discoveries, confirmed by the researches of Messieurs Marignac, De la Rive, Frémy, and E. Becquerel, have proved that ozone is oxygen electrified. The singular properties of oxygen thus modified, which have generally attracted the attention of chemists and philosophers, help to explain several natural phenomena of great importance.

According to M. Scoutetten’s views, ozone is no longer a mere chemical agent ; it is an instrument employed by Providence for the production of the grandest phenomena of nature. It is the agent which presides over the laws of atmospheric electricity, which explains the formation of aqueous meteors, the periodical and diurnal oscillations of the barometer, the means of restoring to the atmosphere the oxygen destroyed by the respiration of animals, by natural oxidation, and by combustion for the purposes of warmth, cookery, and grand industrial manufactures.

We shall find this active power exercising its influence on organized beings, exciting life, provoking maladies, and determining death. We shall find chemistry demanding of ozone the secret of its combinations with nascent oxygen ; medicine calling for experiments to render healthy spots now infested by pestilence, seeking the cause of the most fearful epidemics, and entreating for remedies against those evils which it is now powerless to subdue.

Experiments have proved beyond a doubt, that ozone is electrified oxygen. This novel condition of oxygen will probably be one day turned to account in the arts. It has no action on pure water, although, if left in contact with it for several hours, it disappears. Ozone rapidly destroys organic colouring matters, as well as ligneous and albuminous substances. It quickly destroys all oxidizable miasms, and is the most powerful disinfecting agent yet discovered.

The facts already known connected with the presence of ozone in the atmosphere are extremely curious and interesting. For instance, ozone is found to be absent from inhabited houses. Slips of ozonoscope paper have been kept in each of the wards of the Military Hospital of Metz, for twenty-four hours, for eight-and-forty, and even for several days, without affording the slightest trace of ozone ; while slips of the very same paper, hung outside the windows of the establishment, gave seven, eight, and even ten degrees of the ozonometric scale. Similar experiments have been made at Versailles by

Dr. Bérigny, with the same results. It is impossible to avoid suspecting, that a clue is thus given to the different effects produced upon the health by in-door exercise and out-door exercise, by town life and country life, by labour in a metropolitan workshop, and labour in the open fields.

Dr. Böckel noticed, that malaria always occurs when the ozonoscope marks zero or the lowest possible degree, and that marsh-fevers rage most severely under exactly the same circumstances. At Strasbourg the appearance of the cholera coincided with the absence of ozone, while the decrease of the epidemic was accompanied by the return of ozone. From these and similar observations it would result, that in hospital wards and sick rooms, measures should be adopted to generate a perceptible and notable quantity of ozone."—On Ozone, abridged from *Household Words*, August 7th, 1858.

"Des observations faites comparativement au mois de Juillet, 1861, aux trois stations des Pyrénées, de Paris, et de Versailles, il résulte ce qui suit:—1°. La courbe ozonométrique aux Eaux Bonnes a oscillé entre les nuances 5 et 16 de l'échelle de Bérigny. 2°. La courbe ozonométrique à Paris, bien que l'humidité a toujours été assez notable (de 70 à 85) s'est toujours tenue entre les degrés 1 et 3 de l'échelle de Bérigny. 3. A Versaille il y a eu constamment plus d'ozone qu'à Paris, mais beaucoup moins qu'aux Eaux Bonnes. N'avons nous pas dans ces constatations la démonstration directe, que l'air de Paris n'est pas le même que l'air des Pyrénées; qu'il ne contient que des traces insensibles d'ozone (oxygène électrisé), tandis que cet élément existe en proportion notable dans les montagnes?"—Observations Physiques et Météorologiques Recueillies par M. de Pietra Santa; *Comptes Rendus de l'Académie des Sciences*, t. liv, p. 204. January, 1862.

"Sulphuretted hydrogen, phosphoretted hydrogen, and all foul effluvia, are speedily oxidized and destroyed by ozone. It is, therefore, the great purifier of the air; and owing to its continual exhaustion by oxidizing processes, it is difficult to discover the presence of ozone in large and populous places, or in close and crowded dwellings. In the open air of the country and on the sea, it constantly exists in a proportion which is probably subject to great variations, although ruled by laws which are at present unknown. We cannot doubt that ozone exerts an important influence on the atmosphere, and therefore on the health of animals and vegetables. It has been said that its deficiency in the air will account for cholera and fevers, since the foul effluvia or miasmata giving rise to these diseases, are, under those circumstances, not completely destroyed or removed by the oxidizing action of ozone."—Faraday on Ozone at the Royal Institution, June 13, 1851; *London Medical Gazette*, June 20, 1851.

"From what has been stated above, it is evident that allotropic oxygen is necessary to the preservation of animal life in perfection, and that its presence must be valuable were it only as a deodorizer and

disinfectant, both of which offices it fulfils in virtue of its greatly increased power for combination."—Pereira's *Materia Medica*, vol. I, p. 278, 4th Ed., 1854.

"Nature has mercifully supplied us with a natural and abundant disinfectant in ozone, the office and property of which appear to be to destroy all oxidizable mephitic emanations, and miasmatic exhalations with which the atmosphere is constantly contaminated, and thus to preserve and sustain its purity unsullied.

The quantity of ozone necessary to purify miasmatised air is exceedingly minute. From experiments instituted by Schönbein, it appears that atmospheric air containing but  $\frac{1}{3240000}$  of ozone, is capable of disinfecting its own volume of air loaded with the miasmata given off, in one minute of time, by 4 oz. of flesh in a high state of putrefaction.

Schönbein, Moffatt, and Scoutetten, are of opinion that a proper admixture of ozone with atmospheric air exercises an important influence on the animal economy, and is indispensably necessary to the due accomplishment of all the vital functions, and to the relief and modification of disorder and disease. In confined places, where ozone cannot penetrate, plants and men become blanched; the skin grows palid, the blood loses colour, lymph predominates, all the tissues soften, and serious diseases of the adynamic type break forth."—*On Hygiene*, by J. H. Pickford, M.D., par. 1073—5 and p. 69.

"The last of the disinfectants proper to which I refer, is the singular substance *ozone*, which has a special interest as being in all probability the great natural disinfectant. Bcrzelius and Faraday represent it as simply oxygen in a peculiar or allotropic state of modification, and M. Frémy has affirmed it to be oxygen modified in properties by the action of electricity upon it.

No one who has experimented on ozone will deny its potency. I refer to it here because there are so many reasons for believing that it is the agent that prevents the accumulation in the atmosphere of volatile organic bodies, by converting them into water, carbonic acid, nitric acid, and ammonia, that we cannot avoid looking hopefully to it as destined to prove our *Disinfectant par excellence*. Certain as we are that for thousands of years miasmata, malaria, poisonous effluvia, and every gas, vapour, and volatile body, developed at the surface of the earth, must have found their way into the atmosphere, and that nevertheless its purity is not sensibly affected, we must regard the constituent or condition of the air, which has secured its purity during centuries, as one demanding special study. Further, this constant process of disinfection has not interfered with the respiration of animals, so that we may fairly regard ozone to be a substance applicable as a disinfectant in places occupied by human beings, or by the lower animals. How difficult it is to prevent the spread of erysipelas, gangrene, fever, and the like, in hospitals, every medical man knows too well. Ozone at least deserves

a trial as a disinfectant in those cases."—On some of the more important Chemical Disinfectants, by Prof. George Wilson, M.D. *Pharmaceutical Journal*, vol. XII, p. 278.

"During the prevalence of cholera in 1854, it was found, from an extensive series of diurnal observations, that ozone could be detected all round the metropolis, while no trace of it could be found at Saint Thomas's Hospital, or at the Board of Health. It was observed that at stations of high elevation, ozone was of general occurrence, while at low levels it was absent. This might either be from the less agitation and replacement of the air at low levels, or from the deozoneizing effects of the impurities existing in such atmospheres, which may afford a solution of the anomaly of the usual absence of ozone from the atmosphere of the densely inhabited parts of London."—Dr. R. D. Thomson, at Meeting of Metropolitan Association of Medical Officers of Health, March 14, 1859.

"About the 20th of October ozone was very low; there were but two men in the hospital; but three cases of sciatica came in, and several cases of fever occurred among the natives. On the 23rd the quantity of ozone showed marked increase, and all the patients recovered.

The only other sudden decrease in ozone (9th Nov.), was followed by three-fold increase of patients in the hospital, and by the presence of rheumatism and influenza, which disappeared in a few days. I am aware that influenza is believed to follow an increase of ozone: certainly not under all conditions. There is no influenza in India after "dust storms," which observation has shown to cause an extra amount of ozone in the air."—Notes on the Medical Topography of Kussouli, North-Western Provinces, India, by W. W. Ireland, M.D.; *Edinburgh Medical Journal*, July, 1862.

## II.

## PERMANGANIC ACID AN OZONIDE.

Permanganic acid is an ozonide, and the oxygen which is set free during the decomposition of the permanganates, is in the ozonic state.

“ According to Schönbein, that which has hitherto been regarded as permanganic acid is really composed of peroxide of manganese and ozone, inasmuch as, with deoxidizing agents the so-called permanganic acid behaves exactly like ozone itself.”—Gmelin’s *Handbook of Chemistry*, vol. iv, p. 209, foot note.

“ To the *oxygen of permanganic acid* Schönbein applies the term *ozone*, and denotes it by O with a minus sign in the centre, this acid being an *ozonide*; while the oxygen of binoxide of barium is termed *ant ozone*, and its symbol is O with a plus sign in a central space, the compound being an *ant ozonide*. When the well known experiment is made of mixing binoxide of hydrogen and permanganic acid, the ozone and ant ozone rush together and form common or neutral oxygen.”—Dr. R. D. Thomson, at meeting of Metropolitan Association of Medical Officers of Health, 14th March, 1859.

“ It seems that the second atom of oxygen in the peroxides of hydrogen and barium is not merely retained in an unstable state of combination, but that it is, by association with the oxide of an electro-positive element, like hydrogen or barium, thrown into a polar state opposite to the polar state of the oxygen in unstable protoxides, and to that of the loosely combined oxygen in the more or less chlorous peroxides. Hence, when the peroxide of hydrogen or barium is brought into relation with one or other of these oxygenised compounds, the oppositely polarised oxygens unite with one another, thus :—



Odling’s *Manual of Chemistry*, par. 129, p. 124.

“ **OZONE.**—In a letter to Professer Faraday Schönbein writes :— After many fruitless attempts at isolating ozone from an ozonide, I have at last succeeded in performing that exploit; and have also found out simple tests for distinguishing, with the greatest ease, ozone from its antipode ‘ant ozone.’ As to the production of ozone by purely chemical means, the whole secret consists in dissolving

pure manganese of potash in pure oil of vitriol, and introducing into the green solution pure peroxide of barium, when ozone mixed with common oxygen will make its appearance, as you may easily perceive by your nose and other tests. By means of the ozone so produced I have rapidly oxidized silver at the temperature of 20° C, and by inhaling it produced a capital catarrh."—*Chemical News*, June 21, 1862.

## III.

## CONDY'S FLUID A SOLUTION OF PERMANGANATES.

Condy's Fluid is a solution of alkaline permanganates and consequently a disinfectant, whose active principle is analogous to, if not identical with, that by which nature operates, namely —ozone.

ROYAL COLLEGE OF CHEMISTRY,  
July 21, 1856.

DEAR SIR,

In accordance with your request, I have carefully examined the alkaline manganates and permanganates with reference to their application for the purposes of deodorizing and disinfecting, for which you propose them. The remarkable facility with which these substances give off their oxygen to other bodies being taken into consideration, the idea of using these salts as deodorizers and disinfectants appeared to me *a priori* a most happy conception; but I was scarcely prepared for the extraordinary effects, which the manganates and permanganates are capable of producing, when employed for this purpose. Water taken from stagnating ponds, with their organic contents in a state of most active putrefaction, and emitting the most repulsive odour, may be deprived of every trace of unpleasant smell, instantaneously, and by comparatively small quantities of manganate and permanganate of potash and soda. The destruction of the organic matter, that is, its conversion into the last products of transformation, is well marked by the rapid decolorization of the deep emerald or purple solution of the manganate or permanganate, as the case may be. On allowing the brown sediment of binoxide of manganese to subside, the waters which I examined had become perfectly clear and colourless, retaining no odour whatever, or, in extreme cases requiring a large quantity of the disinfectant, but the slight odour belonging to the alkali present in the manganese salt; and which may be readily removed by the addition of a few drops of an acid.

The manganates and permanganates surpass in their deodorizing and disinfecting powers most compounds which are usually employed for this purpose. Metallic salts, such as the compounds of lead, iron, and zinc, &c., act extremely well, if the odour to be removed arise from sulphuretted hydrogen and ammonia, or substances analogous to the latter, when a metallic sulphide and a salt of a metallammonium is formed. But frequently, the odour belongs to substances of a different class, which are fixed by neither of the constituents of the metallic salt. The odour of the water, which in my experiments yielded perfectly to the action of the manganates, was scarcely altered by the use of very considerable quantities of the usual metallic salts. Moreover, the offensive substances are not destroyed by metallic

salts, but only fixed ; they appear again—the sulphuretted hydrogen by the action of an acid, the ammonia-like compounds by that of a powerful fixed alkali. The manganates and permanganates, on the other hand, destroy the smelling substances completely ; containing, as they do, a large quantity of oxygen, the very agent which accomplishes all natural disinfection, they give rise to an actual process of combustion, in consequence of which the cause of the odour or putrefaction is permanently removed. They resemble, in this respect, the alkaline hypochlorites, such as hypochlorite of potash, soda, or lime, (chloride of lime,) the action of which is likewise permanent. The hypochlorites act with less energy and rapidity than the manganates, and are in this respect inferior ; but they have an advantage over the latter by their evolving chlorine in the gaseous state, and destroying in this manner odorous and putrefactive substances which are diffused in the atmosphere. But as the chlorine evolved is frequently found objectionable by, and injurious to patients, it would be important to ascertain whether the same effect could not be accomplished by exposing the contaminated air to the action of extended surfaces of solutions of the manganates and permanganates, either contained in shallow vessels, or diffused over sheets of wire gauze.

The manganates and permanganates have, moreover, the advantage of possessing peculiar and strongly marked colours, whereby they are readily and safely distinguished from other compounds. In consequence of this marked coloration, accidents which have been frequently caused by the incautious and erroneous use of hypochlorites, or of metallic salts, are scarcely possible with the manganates and permanganates, which are, moreover, in themselves comparatively innoxious.

I remain, Dear Sir,

Yours very truly,

A. W. HOFMANN.

H. B. Condy, Esq.

“ Mr. Condy, of Battersea, has recently introduced to the notice of the profession and the public a disinfecting fluid, of which the chief constituent is condensed oxygen. It possesses one most important advantage over chlorine, that it is not poisonous, does not evolve any noxious or unpleasant smell, and may be employed to purify water. In short, it is a near approximation to ozone, and promises entirely to supersede chlorine as a disinfectant. It is favourably noticed by the Board of Health as a true disinfectant.”—*On Hygiene*, by J. H. Pickford, M.D., par. 1083.

## IV.

PERMANGANATES FIRST APPLIED TO DISINFECTION BY  
THE AUTHOR.

The use of the alkaline permanganates as disinfecting agents, is an original idea of the author. Previously to the bringing out of Condy's Patent Fluid, no work on chemistry, ~~or~~ *materia medica*, in any language, and no scientific authority, English or foreign, had ever hinted at the application to disinfection of the well known oxydizing action of the permanganates on organic matter. So little were those salts suspected of being possessed of any industrial value, that they did not appear in any of the collections of chemical products exhibited at the International Exhibitions of 1851 and 1855. The edition of Ure's Dictionary of Arts, Manufactures, and Mines, published in 1860, was the first standard work in which the disinfecting properties of those substances received mention, and in it the discovery is justly attributed to the author. Within the last twelvemonths, several claims have been made on the Continent to the independent observation of the purifying properties of the alkaline permanganates, which, though inadmissible as regards priority of discovery, constitute valuable confirmations of the author's assertions.

DEPARTMENT OF SCIENCE AND ART,  
SOUTH KENSINGTON, LONDON, S.W.  
February 2, 1857.

DEAR SIR,  
I have to thank you for the illustrations of your curious, and to me novel, application of manganates and hypermanganates.

Your obedient servant,

Henry B. Condy, Esq.,  
Battersea, Surrey.

LYON PLAYFAIR.

"Mr. Condy has applied condensed oxygen, rendered still more powerful by being also nascent, to the disinfection of putrid matter, and by a happy scientific idea has produced a very beautiful liquid, completely destructive of putrid matter, and there are many cases, especially in private houses, where it will be the most convenient of any to use."—Dr. Angus Smith, at Meeting of the Society of Arts, 22nd April, 1857.

DEAR SIR,

MANCHESTER, December 31, 1861.

"It would be as well if you were to call the permanganate solution your 'Patent *Disinfecting Fluid*,' lest any one should con-

sider that you claimed the discovery of the solution itself. It certainly is the most rapid and elegant of all disinfectants.

Mr. H. B. Condy.

Yours sincerely,

R. ANGUS SMITH.

“ C'est un autre chimiste Anglais, M. Condy, qui a découvert la curieuse propriété dont jouissent les permanganates alcalins dissous dans l'eau pour purifier les substances organiques, et pour les désinfecter en anéantissant leur odeur. Il a publié récemment une notice sur les avantages du permanganate de soude pour désinfecter les matières organiques, pour purifier l'eau saumâtre, les substances animales, &c., et propose d'en faire usage pour remplacer les sels de plomb, de zinc, de cuivre, le goudron, le chlore, les chlorures, &c.”

—Louis Figuier, in *La Presse*, August 6, 1859.

“ One of the most thorough methods of oxidation is by the use of the manganates and permanganates. They transfer their oxygen to organic substances with great rapidity, and completely destroy them. They are, therefore, complete disinfectants. They destroy the odour of putrid matter rapidly, and oxidize sulphuretted and phosphoretted hydrogen, as well as purely organic substances. As they do this by oxidation at a low temperature, they are the mildest form of destructive disinfectants, and their application to putrid liquids of every kind give the most satisfactory results. Their use has been patented by Mr. Condy.”—Article DISINFECTION in URE's *Dictionary of Arts, Manufactures and Mines*, 5th edition, 1860.

“ La médecine et la chimie croient pouvoir attribuer à la présence ou à l'absence de l'ozone, les divers états higieniques de l'atmosphère. En effet, à l'aide de l'ozonomètre, ou a constaté des variations sensibles, durant les époques d'épidémie, dans la quantité d'ozone. Partant de ce principe, un professeur allemand a trouvé moyen d'ozoniser, d'assainir à volonté des localités dépourvues de cet élément, et de réparer les déficits. Il fait simplement une pâte composée de deux parties de permanganate de potasse et de trois parties d'acide sulfurique. Le dégagement de l'ozone dure plusieurs mois.”—*Revue Britannique*, No. 10, p. 484; October, 1861.

“ Dr. Pincus, of Insterburg, Prussia, tells us, through the medium of *Casper's Vierteljahrsschrift*, of Berlin, that by means of permanganate of potash the odour left on the hands after post-mortem examinations, may be immediately and effectually removed. He has now used it with complete success for a year. The oxidising power of this substance suggested to him its use for the above purpose.”—*British Medical Journal* for May, 1862.

## V.

## CONDY'S FLUID A TRUE DISINFECTANT.

Condy's Fluid is a true disinfectant, by its action destroying completely the products of decomposition, and not merely a partial deodorizer or antiseptic. But while possessed of the property of seizing upon and transforming actually-decomposing matter, it is obvious that by reason of the oxidizing action which it exerts this fluid must be powerless to hinder the prevention of decay, which is itself a process of oxidation. Unlike antiseptic substances, such as the metallic salts and compounds containing sulphurous acid, creasote, and other products of the distillation of coal, Condy's Fluid does not coagulate albumen. This property enjoyed by antiseptics of rendering albuminous matter insoluble is what constitutes the essence of the process of pickling, by means of which the comparative stability of organic substances is ensured. In restraining the decomposition of animal and vegetable matter this property is of the utmost importance; but it has nothing whatever in common with the action of disinfectants properly so called, which are all direct or indirect oxidizing agents characterized by more or less of instability. A stable constitution in themselves, as well as the power of inducing stability in organized substances submitted to their action, would seem, moreover, to be a necessary requirement in antiseptic agents. Instability of constitution, on the other hand, is essential in a true disinfectant. No other deodorizing substances can be compared for instability with the permanganates: on coming in contact with the emanations from decaying organic matter, they rapidly unite with them and pass off into stable oxy-compounds incapable of further transformation. In this union they are themselves lost, and so long as they remain undestroyed, they would seem not to exert any perceptible action. The proper use of antiseptics is by their application to fresh organised substances to prevent decay, while that of the true disinfectants, when applied to decaying organic matter is to restore soundness, by the destruction of the offensive products of decomposition. The employment, therefore, of antiseptic or pickling agents for the purposes of disinfection cannot but lead to deceptive results, just as the use of true oxidizing disinfectants must produce disappointment when employed to do the work of antiseptics.

"The chairman (Dr. Lyon Playfair) here called attention to a specimen of disinfecting fluid before him, which he said contained a clever application of oxygen. This substance, which was called 'Condy's Patent Natural Disinfectant,' contained for two equivalents of manganese seven equivalents of oxygen, and these in a state of combination, really attacked organic impurities and destroyed them."—*Journal of the Society of Arts*, vol. v, p. 342, April 24th, 1857.

**"MANGANATE AND PERMANGANATE OF POTASH.—Condy's Disinfecting Fluid.**—The same insuperable objection [the introduction by disinfectants of sulphates which in time become reduced to sulphurets, into the substance to be disinfected], applies also to every one of the sulphates of the metallic oxides which have often been suggested as disinfectants. The influence of permanganate of potash is of a different character. The potassium, equally with zinc, iron, and other metals, decomposes and renders innocuous the sulphuretted hydrogen and sulphuret of ammonium; but the principal agent of disinfection is the *nascent* oxygen which is liberated from the acid in presence of organic matter. Permanganic acid is a very unstable compound, and readily parts with three equivalents of *nascent* oxygen to any oxidizable substance, binoxide of manganese remaining;



This compound, therefore, possesses a double action : the potassium decomposes the sulphuretted hydrogen and sulphuret of ammonium, while the acid evolves oxygen in a condition of activity ready to destroy any other noxious gases in offensive organic matter. Chloride of zinc decomposes only sulphuret of ammonium, and has no effect whatever upon sulphuretted hydrogen ; permanganate of potash, by the potash alone [independently of the action of the nascent oxygen], decomposes both."—Dr. Medlock's *Records of Pharmacy and Therapeutics*, August, 1858, p. 29.

MEDICAL COLLEGE, THE LABORATORY,  
*March 5th, 1859.*

I have been requested by Mr. Condy to investigate the chemical power of his "Patent Disinfecting Fluid," and therefore I have submitted it to a very severe test, from which I find that it has the power of removing most completely the offensive emanations from all kinds of decomposing organic matter.

Its mode of action is not like that of many so-called disinfectants which merely delay putrefaction or mask the bad odours by others which are scarcely less offensive, but it operates by a perfect destruction of the organic matter, and by the formation of oxy-compounds which are inert. I have tried its corrective powers with the matter of cesspools and the public sewers, with the foul secretions from putrid sores, with the decomposing animal matter in the

dissecting-room, with bilge water, and with other disgusting fluids, and have found that its action is complete. Beside which, when mixed with muriatic acid, it evolves chlorine gas, which may be made the means of purifying an atmosphere that could not easily be brought into contact with the liquid.

All these properties, together with its easy application, and its not being of a poisonous nature, make it one of the most valuable disinfectants of the present day."

HY. LETHEBY, M.B., M.A., Ph.D., &c.

Professor of Chemistry in the College of the London Hospital, and Officer of Health for the city of London.

"Especially as regards the offensive odours which arise from house-refuse and other putrid accumulations, it must be remembered that the so-called deodorizers can seldom do more than palliate the evil. The distinction between deodorizers and *true disinfectants* must be borne in mind.

The second class of disinfectants, namely, those which less or more rapidly promote complete oxidation of organic matter, are the *true disinfectants*, and properly so designated.

Manganates and permanganates of soda and potash have been suggested as disinfecting agents by Mr. Condy, of Battersea, who has prepared a cheap form of their solutions, under the title of Natural Disinfectants. A report on their mode of action, by Dr. Hofmann, will be found in the Appendix A.

APPENDIX A.—The manganates and permanganates destroy the smelling substances completely; containing, as they do, a large quantity of oxygen, the very agent which accomplishes all natural disinfection, they give rise to an actual process of combustion, in consequence of which the cause of the odour or putrefaction is permanently removed."—Lindsey Blyth's *Minute on Disinfection*, issued by the General Board of Health, Whitehall, January, 1857.

"The subject of the ventilation of sewers has occupied much of my attention during the last twelve months, and in conjunction with Mr. Bean, your surveyor, I have been engaged in a series of experiments with reference to the deodorization of their gases. Hitherto my experiments have been confined to ascertaining the amount of deodorizing power possessed by dry charcoal, and of the same material saturated with Condy's Patent Disinfecting Fluid. That charcoal has an extraordinary capability of arresting and absorbing fetid gases has been attested by Dr. Letheby, the City Officer of Health, and my experience fully confirms his observations on this point. But it was to Condy's Fluid, from some successful experiments made in my laboratory, that I looked for a larger amount of destructive agency. The decomposition of the components of this latter deodorizer affords such an extraordinary volume of available oxygen that it offers the most ready, cheap, and certain means of burning up impurities. The operation of charcoal, I believe, is principally exerted on the sulphuretted hydrogen and sulphide of ammonium existing in the sewer gases, but the power of nascent

oxygen would not rest here. In sewer emanations there exist offensive compounds, which, although as yet they have defied the scrutiny of the chemist to define, would not resist the pyrogenic influence of free oxygen. This, therefore, appears to me the element to which we have a right to look for the most complete results. The permanganate of potash is a substance having the peculiar property of freely and easily parting with a portion of its combined oxygen to any oxidizable organic substance. The potassium, like other metallic bases, decomposes the sulphuretted hydrogen and sulphide of ammonium, whilst the oxygen set free, unites with or burns, as it were, the remaining noxious gases arising from putrescent organic matter."—F. J. Burge, Medical Officer of Health; *Third Annual Report to Board of Works*, 1859.

"The permanganates (Condy's Fluid) are powerful deodorizers and disinfectants, without being antiseptic in the pickling or preserving sense of the term; but they are truly and peculiarly antiseptic in the strict and real meaning of the word, inasmuch as they bring back to its original state of purity decaying organic matter, and restore to it the same condition of soundness which existed before the setting in of decomposition. Condy's Fluid, though capable of acting upon all organized substances, does nevertheless discriminate in the most delicate manner between decomposing and undecomposing organic matter. It will, no doubt, act upon and oxidize sound organic matter when no unsound matter is present; but its action in this case will be slow, whereas on tainted substances it acts rapidly, and on putrid matter almost instantaneously."—Wm. Bartlett, M.P.S., *ON DISINFECTANTS*; *The Field*, Feb. 9, 1861.

QUANTITIES required of each of the Principal Deodorizers to remove the odour, more or less completely, from ordinary London sewage.

Names of Deodorizers.	Nature of Action of Deodorizers.	Strength of the liquid Deodorizers. (sp. gravity.)	Quantity of dry matter of Deodorizer required per gallon of sewage. (grains.)	Results obtained.
CHLORIDE OF LIME ....	<i>Powerful indirect oxidizer</i>	....	8	Complete.
Quicklime .... ....	Promoter of oxidation ....	....	12	Incomplete.
McDougall's Powder	Antiseptic ... ....	....	40	Ditto.
Peat Charcoal ... ....	Feeble indirect oxidizer ....	....	150	Ditto.
CONDY'S FLUID ....	<i>Powerful direct oxidizer</i>	1.055	9	Complete.
Burnett's Fluid ....	Powerful antiseptic ....	1.594	53	Incomplete.
Ledoyer's Liquid ....	Antiseptic .... ....	1.160	100	Ditto.
Ellerman's Liquid ....	Antiseptic .... ....	1.443	203	Ditto.

From Table by Dr. Letheby, in Meehi's *Sewerage of Towns*, App. p. 89.

## VI.

## RESULTS PERMANENT.

Having the power of reducing the noxious emanations from decomposing organic matter to the state of ultimate products of transformation, Condy's Fluid is, in its action, as permanent as it is sure. This is easily demonstrated by the following experiment:—

Treat a certain number of samples of water in a more or less offensive state, according to the directions given at page 32, under the head of the water test. To these, after all purifying action appears to be at end, add a few drops of sulphuric acid. In those in which chloride of zinc or other such mere ~~so-called~~ deodorizer or antiseptic has been used, any offensive odour which they previously had will be immediately revived, whereas no such effect will follow on adding the acid to those waters that have been treated with Condy's Fluid.

BROOME PARK, NEAR CANTERBURY,

SIR,

June 9, 1859.

I thank you much for your letter. I now know more of the fluid than I did when I last wrote you, and find it perfectly available for all the uses for which I require it.

I also find experimentally that *the results obtained by it are much more durable than those produced by either of the two chlorides which Beaufoy sells.*

Beaufoy's chlorides are, moreover, extremely injurious to the living tissues of the body.

As a travelling article (especially in dangerous climates), your fluid is invaluable. In morasses in the East, I have had to burn gunpowder in my tent and in my room before closing up for the night. Your fluid would wholly disinfect such localities.

Yours truly,

G. CHICHESTER OXENDEN.

*From ANDREW CLARK, M.D., &c., London Hospital, Fellow of the Royal College of Physicians, Lettsomian Professor of Medicine to the Medical Society of London.*

SIR,

I have received the sample of your Disinfecting Fluid, and thank you for it.

I had, however, before receiving your specimen, examined the fluid, tested it in various ways, and arrived at a conclusion as to its value.

One of our ablest and honestest chemists has spoken of your fluid favourably from his point of view. I can speak of it favourably from mine.

I am a pathologist. My workshop often contains so many remnants of decaying organic matter, that the atmosphere becomes unbearable to any but myself, and bearable to myself only at the expense of comfort and of health. To lessen the physical evils attendant upon the nature of my pursuits, I have carefully tried every known deodorizer, and of all that I have tried, I am free to confess that yours is among the best, if it is not the best. At all events, it is that which I use and with which I am satisfied.

I must here take exception, however, to one statement of Hofmann,—that your fluid is instantaneous in its operation. This statement has led to great disappointment; and has induced many to discard the use of it, who in the absence of this statement, would not have discarded it. In my experience, your fluid is not instantaneous really or apparently in its operation; but it is better than that, it is *slow, silent, and sure*. It is at the same time, however, more rapid in its operation than most deodorizers, which appear to be more rapid only because they substitute one kind of smell for another, which yours does not.

I have never before given a testimonial of this kind; and I would not have given this if I had not been satisfied that it was a duty to give it for the sake of society.

I am, Sir, your obedient servant,  
ANDREW CLARK, M.D.

## VII.

## EFFECTS INNOXIOUS AND WHOLESOME.

Condy's Patent Fluid, having for its active principle oxygen in combination with the mildest of all the metals—manganese—is not deleterious nor dangerous to use, like antiseptic and so-called deodorizing substances, most of which are of a poisonous or otherwise objectionable character. The most familiar examples of the latter are fluids composed of chloride of zinc and compounds which contain carbolic acid, as well as nitrous acid, and chloride itself. The inoffensive nature of Condy's Fluid, as compared with other disinfectants, is very strikingly brought out by the following experiment:—

Have two ordinary glass fish-globes, each filled with water, and containing some common kind of fish, which can be easily procured; mark one globe B and the other C. At the time when the daily change of water is made, add to the globe B ten drops of Burnett's Fluid for every gallon of water, and to C Condy's Fluid in the same proportion; continue this treatment daily, taking care always to give Burnett to B and Condy to C, till such time as the fish in the former turns on his back, which will very soon be the case. However often this experiment is repeated, and with whatever proportion of fluid, the fish B will uniformly die first, whereas C will in many instances improve in health and condition.

The result will be the same, when, instead of chloride of zinc, other deodorizing agents are tried in this manner against Condy's Fluid; chloride of lime, quicklime, perchloride of iron, tar water, and all of those antiseptic fluids which were formerly so generally but fallaciously relied on as disinfectants, ~~all~~ exert most injurious effects on animal and vegetable life.

“ Nearly all disinfectants possess some disadvantage fatal to their general employment. Charcoal, nearly the only antiseptic which will also destroy effluvia, is difficult of application, disagreeable to the eye, and very dirty. Chlorine, otherwise a most efficient deodorizing agent, especially in the convenient shape of chloride of lime, has the disadvantage of a most villainous odour. Burnett's chloride of zinc, and the other metallic salts, require to be spread over a large surface to be of any benefit, and are all highly poisonous to man and beast. I have seen two fatal cases of accidental poisoning by Burnett's chloride of zinc. In the farm and the kennel great care

would be necessary to prevent accidents from bottles and saucers of this highly poisonous and corrosive fluid being left about. Valuable animals are frequently lost from the administration of 'zummut out of a bottle,' by ignorant attendants."—Edward Nicholson, *ON DISINFECTANTS*. *The Field*, Feb. 2, 1861.

" This case makes up thirteen cases of which I have found record, or obtained the particulars, where life has been endangered or destroyed by swallowing this corrosive poison [solution of chloride of zinc]. The first recorded instance of poisoning by this solution of chloride of zinc occurred shortly after its introduction, about twelve years ago. Since then, public attention has frequently been directed to its danger in the course of trials and inquests. When recording a case in the *Lancet* of 1853, Dr. Hassall writes: ' I cannot quit this case without insisting upon the propriety of so altering the appearance of the bottles in which Burnett's fluid is sold as to obviate the possibility of its being again taken by mistake for fluid magnesia.' In the *Lancet* for 1857, when noticing a case in which the fluid had been taken for gin, the following comment is made: ' It is to be regretted that Sir William Burnett does not tinge his preparation of a blue or green hue. Medicines are seldom of those tints; and there is no potable for which this virulent poison could then be mistaken.' The same culpable negligence to which I have alluded still continues, although the adoption of the simple and inexpensive precautions suggested would have probably prevented much suffering and saved some lives. I therefore think it the duty of medical men to warn patients against admitting such an unguarded deadly poison into their houses, especially as its influence in the sick room is 'merely deodorizing,' not disinfecting."—On a case of Poisoning by Sir William Burnett's Solution of Chloride of Zine, by H. G. Wright, M.D., M.R.C.P., &c., *Lancet*, Jan. 12, 1861.

" But some of the dwellers along the line of the sewers experimented upon preferred the odour of the sewers to that of the carbolic acid used,—so the scheme was given up."—Deodorisation of Sewer Gases; *Lancet*, 22 March, 1862.

" **BIDDER v. CROYDON BOARD OF HEALTH.**—Injunction, sewage, pollution of the River Wandle. Plaintiff, among other things, stated, that the sewage before its discharge into the river, had been treated with 'McDougall's Disinfecting Fluid'; but this fluid contained a large quantity of carbolic acid, which was highly injurious to animal life. . . . . The Vice-Chancellor (without calling for a reply) said, that the plaintiff was entitled to an injunction. Injunction as prayed."—*The Law Times*, vol. vi, p. 778, August 16, 1862.

" The surface spreading of sewage [as at Croydon], let us warn the public, signifies nothing less than a summer steam of malaria, reeking from field and garden, and laid on by extravagantly expensive machinery, whereas solidified, and rendered inoffensive, the

same material might, at far less cost, be made tenfold more available. Mr. Mechi and Dr. Lethby concur on this point with Mr. Condy, whose authority is indisputable."—*Daily Telegraph*, Dec. 8, 1860.

"There are several objections to the employment of chlorine; it has to be evolved by the frequent repetition of a chemical process; it is difficult to determine the quantity diffused; if introduced in very large quantities it is irritating to the lungs; and altogether it is uncertain and not practical. For these reasons the employment of chlorine as a deodorizer and disinfectant, is by no means so common in these days as it was some ten or fifteen years ago."—*Social Science Review*, June 28, 1862.

"Unfortunately chlorine is itself an offensive, irritating, and corrosive substance, which will account for its not having been more extensively employed."—Parliamentary Report on Disinfectants, by Dr. Leeson; *Pharmaceutical Journal*, vol. vii, p. 113.

"Chloride of lime requires caution in its use, for large quantities of it, if placed in a confined space, where, indeed, disinfectants are most wanted, cause so rapid an evolution of chlorine, that injurious effects may easily be produced upon the respiratory organs, especially where they are already affected. That chloride of lime succeeds in removing all foul smells arising from the decomposition of animal bodies is well known to all who have tried it; but besides the absolutely injurious effect we have alluded to, there is also another, of less importance it is true, consisting in its own disagreeable effects upon the nose. As far as comfort is concerned, this disinfectant simply drives one smell out by substituting another; and though chlorine gas, when properly diluted with fresh air, is not practically unsafe, it is by no means pleasant."—*The Field* (editorial), January 26, 1861.

"Nitrous acid fumes, where not largely diluted with air, exert a violent and even dangerous action on the respiratory organs; on account of their density; they are with difficulty brought into complete contact with the atmosphere, and as difficult to displace without employing powerful means of ventilation."—Gaultier de Claubry; *Annales d'Hygiène Publie*, vol. vi, p. 386.

"I carefully examined, at some risk to my health, air from the interior of a macerating tub in the dissecting-room of the Faculty of Medicine of Madrid, which had been treated with chlorine and the vapour of fuming colourless nitric acid, and found that it still retained its insupportably offensive smell. I was always able to determine with ease, in such air, the relation between contaminations of organic origin and the volume of permanganate of potash which was decolorized by exposure to it."—*Etudes sur l'Air de Madrid*, by Professor Ramon de Luna; *Annales de Hygiène Publie*, vol. vi, p. 384.

SIR,

HAMILTON SQUARE, BIRKENHEAD,  
August 13, 1858.

In reply to your note of 8th instant, I beg to inform you, that I have introduced the use of Condy's Fluid to our Hospital, and also for the purposes of the Health Committee of the township, and it has met in both instances with the highest approval.

I have also used it extensively in the sick chamber, and always find it to be an absolute preventive of the least offensiveness from the ejecta of the patients. One advantage renders it immensely superior to every other disinfectant known, all its incidental effects are beneficial to the human frame, while most, if not all others, have a disagreeable odour, or possess some injurious property.

I am, Sir, yours truly,

Mr. H. B. Condy.

C. O. BAYLIS.

Having been requested to test the efficacy of Condy's Patent Disinfecting Fluid, I placed into a solution of it (properly prepared) a portion of horse-flesh which formed the lining of a putrid abscess, from which the horse had died. Before the application of the fluid the smell was exceedingly offensive, but after a few hours' submersion this smell disappeared. I have also tried its efficacy on human urine, which had been standing some time, and from this it removed the peculiar disagreeable odour. The fact of its not being poisonous, together with its certain operation, ought to recommend it to general use.

F. T. BUCKLAND, M.A.

April 2, 1858.

Assistant-Surgeon, 2nd Life Guards.

"Unfortunately a great number of accidents, even deaths, have occurred from the chloride disinfectors now in use; it would, therefore, be better for society if the Manganese Disinfectant were generally introduced, which is said to be free from any possibility of mistake, being perfectly innoxious, and an excellent disinfecting and deodorizing agent.—*Family Herald*, August 7, 1858.

ST. JAMES'S, WESTMINSTER, VESTRY OFFICES,  
14, MARSHALL STREET, GOLDEN SQUARE,

SIR,

May 16, 1857.

I have tried your Disinfecting Fluid against Sir Wm. Burnett's Chloride of Zinc, and am very much pleased with the results, which are in your favour; the particulars may be known by you on application to Dr. Lankester.

H. B. Condy, Esq.

Yours obediently,

J. H. MORGAN.

## VIII.

## GREAT VARIETY OF APPLICATIONS.

Being copied after nature, Condy's Fluid has an extraordinarily extensive range of application.

ST. THOMAS'S HOSPITAL,  
October 31, 1857.

I have carefully examined the disinfecting and deodorizing fluid manufactured by Mr. Condy, and have found it to be most rapid and efficient in its operation. The facility with which oxygen is supplied by this valuable preparation, renders the almost immediate destruction of odours in sewage a matter of certainty. The same instantaneous action is exerted on those smells which frequently increase disease in a household, and which emanate from imperfectly trapped closets and drains. For domestic use it is peculiarly adapted, from the absence of any odour in the disinfectant itself, and from the facility of its application. I have also found it to have a powerful and rapid influence in the removal of the disgusting odour of putrefying flesh and of tainted meat. Water of all kinds which has been contaminated with organic matter, and has thus acquired an offensive smell and taste, is immediately deodorized, purified, and preserved by this valuable deodorizer. I consider it to be a most important addition to sanitary science, and a valuable agent in the hands of the medical profession.

ROBERT DUNDAS THOMSON, M.D., F.R.S.,  
Lecturer on Chemistry at St. Thomas's Hospital and Medical  
Officer of Health for St. Marylebone.

SIR,  
23, PARK STREET, BRISTOL,  
August 1, 1860.

Your letter was forwarded to me here, and I have much pleasure in answering it. I have used your Disinfecting Fluid during the last two-and-a-half years in many ways, and am perfectly satisfied of its value. Sprinkled about the sick-room, it possesses advantages over other disinfectants with which I am acquainted, by rendering the air cool, refreshing, and entirely free from smell, and without injuring the clothes and furniture. In cases of *carcinoma uteri*, I have found it used as an injection, remove the very offensive smell, and give great comfort thereby to the patient and her friends. In wounds from amputation, the operation from ruptured perineum and prolapsus uteri, it has been particularly useful by destroying the unpleasant smell in the dressing and improving the condition and appearance of the parts. I have not tried it internally in a sufficient number of cases to allow me to speak yet of its effects.

In removing the offensive smell from drains, &c., I have tested it severely, and (provided it has been used freely) it has always, in the course of a few minutes, rendered the air perfectly sweet and pure.

In recovering and preventing taint in meat, it has been to my knowledge particularly successful. The meat is plunged into the diluted solution, taken out and hung up, and when cooked, it is entirely free of all unpleasant taste. I do not know whether you are aware of this fact.

I recommend your fluid, far and near, as a most valuable agent. A friend of mine, at Liverpool, had his ship freed of the smell of guano by its use, and was so satisfied that he always now sends out in the ship stores a quantity each voyage for the use of the emigrants.

If any of the above remarks are of value to you, you can make what use you like of them, as I should like your fluid to be more generally known and used.

I am, Sir, yours truly,

To Mr. Condy.

AUG. TALBOT.

"The old hypochlorite of soda (Labarraque's Fluid) has undoubtedly great indirect oxidizing power, but the permanganates (Condy's Fluid) being powerful direct oxidizing agents, and of very unstable constitution, are decidedly superior. Whatever claims of a panacea tendency may be put forward for the latter, must be laid to the score of their being embodiments, not merely of common 'busybody oxygen,' but of its quintessence and spirit, nascent or ozonic oxygen. If the alkaline permanganates happen to have almost innumerable applications in the pathology and hygiene of man, animals, and plants, the reason clearly is, that the principle on which their action depends is oxygen, which plays so universal a part in the economy of nature. No real chemist need be staggered by the pretensions of the permanganates; but, on the contrary, ought to be prepared to recognize the vastness of their field of operation, and the first to point out new uses to which they can be applied."—Correspondence in *The Field*, February 23, 1861.

"The intense red colour of the permanganate solution is readily destroyed by reducing agents; it thus affords a very delicate test for organic impurities either in water or air. The extraordinary energy with which it removes those impurities by oxidation, destroying the active agencies of disease the instant it comes in contact with them, finds a parallel only in the ozoniferous currents of the atmosphere in restoring salubrity after a long period of stagnation and consequent disease. The alkaline effluvia which give their character to the 'close' atmosphere of ill-ventilated dwellings, the miasms of marshy soils, and the deadly reek of putrefying animal matters have their antidote in this universal purifier. By its action, tainted meat or the foulest water are speedily deprived of all offensive or poisonous matter."—*The Electrician*, November 16, 1861.

“CONDY’S HYGIENIC PREPARATIONS.—We have tested the celebrated Disinfecting Fluid which bears the name of Mr. Condy, and have found it all that could possibly be desired. In the Eastern Annex, S.E. passage, Class II., No. 500, will be found exhibited specimens of this thoroughly scientific manufacturer’s productions, under the title of ‘Salts of Manganic and Permanganic Acids.’ Scientific names go far but little with the out-of-door world, especially in chemical matters; but when we say, in plain English, that these hygienic preparations are perfectly innoxious; furnish an accurate test of the purity of air and water; restore tainted food and water to absolute purity and soundness; and are of great value as furnishing a ready supply of oxygen for preventing infection, either to human beings or to cattle, we think we have said enough to show that they are in the highest degree entitled to public favour. We have much pleasure in directing special attention to them on the widest possible grounds; for they are not only a test for, but a means of, destruction of impurity in the air we breathe, or the water we drink, but they also impart freshness and purity to both. They also remove any impure taste from the mouth—another prime consideration, especially in the matter of ‘tasting’ either wines or any other liquids requiring nicety of palate. But the greatest boon of all appears to be the *general* matter of these ‘substances’ being of high importance to the health and comfort of the community at large. They are in the highest degree deserving public notice, and we are glad to say they have been honoured by a ‘prize medal’ of the Great Exhibition of 1862.”—*Era*, August 10, 1862.

## IX.

## A TEST FOR IMPURE WATER.

The most simple and certain means of detecting organic impurities in water is by the use of Condy's Patent Fluid. Since its introduction by the author, it has superseded all other tests for the relative purity of water. The following is an easy way of showing the efficacy of this substance as a water-test:—

Take any number of tumblers; fill up one with distilled water, another with ordinary drinking water from a pump, rain-water butt, or other supply, and the rest with various samples of water more or less contaminated with organic impurities, such as sewage water. Add to each of them, drop by drop, Condy's Fluid (crimson) till the contents begin to assume a decidedly pink hue. This effect will be produced, in the case of the distilled water, if pure, by a single drop; more will be required by the drinking water, which, after standing a little while, will show some signs of muddiness, and a still larger portion by the other samples, in which a brown precipitate will soon form. The quantity of fluid required and the amount of muddiness produced in each, will be the measure of the relative impurity of the several waters. This experiment may be repeated with other deodorizing fluids, and the results contrasted with those produced by Condy's. By having a separate set of glasses for each of the deodorizers to be tried against one another, the comparison will of course be more conclusive.

"The microscope can alone fully detect the nature of the organic impurities of water, but the application of "Condy's Disinfecting Fluid" supplies a ready means of chemically indicating the relative organic impurities of water. "Condy's Fluid" is a permanganate of potash or soda, in solution. When placed in water, it gives it a beautiful pink colour. The oxygen contained in the permanganate is, however, in such a state, that it readily seizes on decomposing organic matter, and converts it into inodorous and inert compounds. It is thus a deodorizer and disinfectant. Whilst the permanganate is acting on the organic matter, it is decomposed, and the water containing it loses its red colour, and in proportion to the quantity of organic matter will be the loss of colour of the permanganate. From the time I first witnessed this property of the permanganate, I have employed it to test the relative purity of waters, and I have found it

of the greatest value. In water free from organic matter, a few drops in a quart will give the water a fine pink colour, which it will retain for months, whilst waters containing organic matter rapidly lose this colour. Of course, the quantity of permanganate thus discoloured will be the measure of the impurity of the water."—Dr. Lankester on Pure Water, in Lecture delivered at South Kensington Museum, in May, 1859.

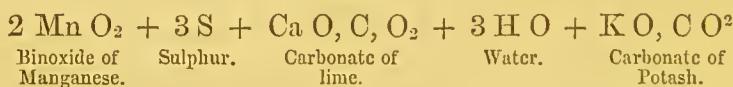
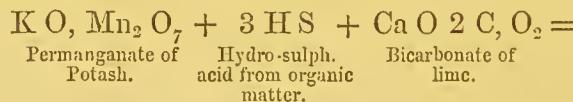
"**DEODORIZING AND DISINFECTING PROCESS.**—Some experiments were made on Saturday last at the chemical works of the Messrs. Condy, at Battersea, to test the efficiency of Condy's Patent Disinfecting Fluid, which consists of solutions of manganate, or permanganate of soda or potash. When used as a test of the purity of water, distilled water assumed and retained, to a great extent, the red colour of the fluid when mixed with it, and the presence of organic matter was indicated in the case of spring and less pure water, by the decolorisation of the disinfecting substance."—*Engineer*, July 9, 1858.

"**TEST OF THE PURITY OF WATER.**—The relative quantity of dissolved and suspended organic matter can be readily tested by the aid of permanganate of potash [Condy's Fluid]. This substance which gives to pure water a beautiful pink colour which lasts for a long time, is readily decomposed by organic matter, and its colour goes. It may be thus employed for the purpose of detecting the relative impurity of two or more waters. A certain quantity of the permanganate of potash being added to equal quantities of different waters, that water will be the freest from organic impurities which retains the deepest colour of the permanganate. Waters which rapidly decompose the permanganate are not fitted for drinking purposes."—Paper of Instructions for Popular Information, issued by the Government Department of Science and Art.

X

PURIFIES WATER, TAINTED PROVISIONS, &c.

The alkaline permanganates of which Condy's Fluid is composed, are the only known substances fitted for effectually purifying drinking water, restoring freshness to tainted provisions, and removing from grain, hay, and provender in general, mustiness and deleterious properties. The remarkably delicate manner in which these salts detect the presence in water of impurities of organic origin, qualifies this fluid, in an extraordinary degree, for the purification of water. Composed of oxygen in combination with manganese—the mildest and most wholesome of the metals—and an alkaline base, it can hardly be supposed to be productive of injury to the system even, when from carelessness or haste, a trace of it in solution or a minute portion of binoxide of manganese in suspension, may have been allowed to remain in the water treated. The nature of the reaction which takes place between the salts of which it is composed and organic matter is moreover such, that when it is used with caution and not in excess, the whole of the metallic ingredient present is separated by precipitation in the solid form, leaving in the water only the alkali which had been in combination with it. As most waters, by reason of a certain portion of carbonic acid which they contain, hold in solution, in the form of bicarbonate, a small quantity of carbonate of lime, the presence of this free alkali is rather an advantage than the contrary, since, by neutralizing the excess of carbonic acid, it converts the more soluble bicarbonate into the less soluble carbonate, which then subsides as a deposit, leaving an alkaline carbonate in its place, thus:—



The superiority of Condy's Fluid for purifying water over filtration through charcoal, which is generally considered the best known means of purification, will be very plainly demonstrated by the following experiment:—

Macerate some hay in a jug of water in a warm place, until the contents are charged with vegetable matter: strain and

pass through a charcoal filter. Operate on the water so treated with Condy's Fluid, as in the experiment at page 32, when it will be clearly shown that, notwithstanding the use of the charcoal, it still contains a considerable quantity of organic matter.

" The relations of water to human life were then reviewed. In noticing the presence of organic matter of animal origin in water, Dr. Frankland said :—' As the deleterious effects of water thus contaminated have been repeatedly observed, we have sufficient reason for looking with great suspicion upon these organic substances ; and it becomes important that the physician should contemplate them as belonging to the proximate causes of disease. It is not sufficient, however, that he should assure himself of the purity of the particular water supplied to a district ; it is absolutely necessary that he should convince himself of the non-contamination of the water actually used in the house of his patient. This is rendered especially necessary in London, where the vicious system of intermittent supply and storage renders the comparatively pure water delivered by the companies subject to contamination of a highly dangerous character. This water is stored in cisterns to which a fresh supply is only admitted every twenty-four hours. These cisterns are generally placed in the basement, and in close proximity to several sources of gaseous pollution. When we reflect upon the power which water possesses of absorbing gases and vapours, it is not difficult to conceive how its purity, when thus stored, must be seriously compromised. But these are by no means the only or even the chief sources of organic impurity. The over-flow pipe from these cisterns is rarely efficiently trapped, and it consequently becomes a conduit for the conveyance of sewer gases from the drains unto the surface of the water in the cistern. The heated flues of every house establish an inward draught through all passages communicating with the external air, and thus a most effective arrangement is provided for saturating the water with the soluble sewer gases. It is evident that this source of dangerous contamination is altogether independent of the quality of the water supplied to the house, and hence the necessity for vigilance in individual houses where disease shows itself.'—Dr. E. Frankland, in Lecture delivered at St. Bartholomew's Hospital. *Laneet*, Oct. 5, 1861.

ROYAL GERMAN SPA, BRIGHTON,  
September 23, 1857.

The experiments I have made with Condy's Manganates and Permanganate Fluid, have convinced me that they are effective means of rendering water which has been kept for a long time in closed vessels, perfectly sweet and fit for use.

F. BUSSE,  
Analytical and Practical Chemist.

SCARF CASTLE, LEWES ROAD, BRIGHTON,

SIR,

October 10, 1857.

Some weeks since you left me a bottle of your invaluable Disinfecting Fluid for investigation, which I have carefully tested and applied in every possible way. It is perfectly harmless and more than a common antiseptic or deodorizer, its wonderful effect upon foul and stagnant water is surprising, rendering it quite sweet and fit for use.

I have therefore great pleasure in bearing testimony to this valuable and important introduction.

I remain, Sir, truly yours,

H. SCHWEITZER,

H. B. Condy, Esq.,  
Battersea.

Analytical and Experimental Chemist.

ROYAL COLLEGE OF CHEMISTRY.

DEAR SIR,

November 12, 1857.

In reply to your note I beg to state, that I have no doubt regarding the applicability of the alkaline manganates and permanganates, when well prepared and in the hands of competent persons, for the purpose of disinfecting water intended for consumption.

Nobody will hesitate to prefer water which has not required to be purified by a chemical agent. But when circumstances involve the necessity of using water which is contaminated with organic matter, and which consequently has to be purified artificially, I would employ for this purpose the manganates and permanganates in preference to any other disinfecting agents with which I am acquainted.

I remain, dear Sir, yours very truly,

H. B. Condy, Esq.

A. W. HOFMANN.

DEAR SIR,

ROYAL MINT, November 10, 1857.

I have made a few experiments on the decolouring and deodorizing properties of your manganic solution, and entirely agree with Dr. Hofmann as to its effective action.

Yours faithfully,

H. Condy, Esq.

WM. THOS. BRANDE.

21, GEORGE STREET, HANOVER SQUARE,

July 18, 1857.

I have great pleasure in bearing my testimony to the valuable properties of Mr. Condy's "Natural Disinfecting Fluid." It appears to me useful in an eminent degree, not only when used towards removing the offensive effects of putrid matter, but as a most valuable disinfectant of unwholesome and stagnant water.

The numerous diseases occasioned by impure water are the source of alarm in the metropolis, and the discovery of a harmless agent, and one efficient in purifying water for use, whether for cooking or drinking, is a boon which cannot be too highly estimated; and it is this property for which I especially recommend this disinfectant of Mr. Condy.

WM. BREWER, M.D.

“Nothing, it may be added, could be more complete than the success of the fluid in rendering the impure water upon which it acted clear and devoid of all offensive odour. How far it would tend to solve the great Thames problem it is for the proper authorities to determine.”—*Times*, July 5, 1858.

The purpose for which I found it most useful was for purifying the drinking water. I used it scantily for other purposes, as it was so extremely useful for this one, for which the other disinfectants are wholly unsuitable and improper.

ARTHUR WHITE,  
Surgeon Superintendent, *Daphne*,  
22nd January, 1859.

It has one advantage over all others in purifying fresh water for drinking purposes.

R. ROBERTSON,  
Surgeon Superintendent, *Wellington*,  
2nd May, 1859.

“Having, with other gentlemen, on Saturday last, witnessed a series of experiments, conducted by Mr. Condy, at Battersea, on his Patent Disinfecting Fluid, we are in a position to state that it was proved to be most effective in the purification of filthy water, the restoration of soundness to partially decomposed flesh, and the oxidation of impurities which invariably cause unhealthiness in the homes of thousands of our people.”—*Morning Star*, January 11, 1858.

September 22, 1857.

I do hereby certify that I have fairly tested the efficacy of “Condy’s Disinfecting Fluid” upon a quantity of putrid meat which was rendered perfectly sweet thereby, after being immersed in a properly diluted solution of the fluid for a few minutes, and then washed clean in water. From my experience, I consider it superior to any disinfecting fluid in the market.

1, Grove Road, Mile End.

JOHN GRIFFITHS, Chemist.

“The effect was most instantaneous, the disinfectant causing the destruction of the putrescent organic matter on the moment of its application.”—*Morning Herald*, July 5, 1859.

“Not fewer than one thousand barrels and tierces of beef and pork, intended for the army and navy, have been got out of the débris comparatively uninjured. Although the casks have been exposed to a great heat, and some of them split asunder, those taken out intact having been sprinkled with Condy’s Fluid, are as pure as the first day they were placed in the warehouses.”—Report on the Salvage after the great fire at London Bridge.—*Daily Telegraph*, 16th June, 1861.

## XI.

## AIR TEST AND PURIFIER OF POLLUTED AIR.

One of the most useful and remarkable purposes to which Condy's Fluid is applicable, is the testing and purifying of the air of confined places. All who are practically familiar with the alkaline permanganates, must have remarked their extraordinary sensibility to the action of every kind of oxidizable impurity. The same change of colour which takes place in those substances on meeting with organic matter in the solid or liquid form, results from their contact with aerial contaminations of organic origin. By noting the amount of decoloration caused in permanganate solutions of various degrees of strength from exposure to the air, the state of the atmosphere, as regards its purity in any particular locality, may be readily estimated. Nothing is better calculated to demonstrate the efficacy of Condy's Fluid in neutralizing foul and unwholesome matter, than this property of its chief ingredients. It is on this circumstance that is based the very interesting use that has been made of those substances by Dr. R. Angus Smith, who, by constructing a special instrument for their employment as an air test, has applied them to the scientific study of the composition of the air of towns, and thus confirmed, in a very striking manner, the utility of Condy's Fluid as a sanitary agent. Dr. Smith's air test, which is arranged with a view to the examination of a certain volume of air abstracted from the atmosphere, though of great use in determining the quality of the atmosphere in any particular place at a given time, affords but little help in obtaining a record of its average condition during a more or less prolonged period. For the latter purpose, the exposure of permanganate solutions in open vessels, is much better suited. The following directions will suffice to enable a person of ordinary intelligence to arrive at a tolerably fair comparative estimate of the average state of the air in any place, such as a bed room, sick room, or hospital ward:—

*Condy's Tell-tale Air Test.*

Place in line, four or a larger number of perfectly clean small dishes of white earthenware. Into each pour one ounce of distilled water, or what is better, the same quantity of water which has been purified by standing in contact with a minute quantity of permanganate, till all the peculiar pink colour has

disappeared. To the first, then add a single drop of a solution of pure permanganate of definite strength, such as Condy's Patent Ozonised Water, or when this is not at hand, Condy's Disinfecting Fluid (crimson), reduced by the addition of two parts of water; to the second, add two drops; to the third, three drops; to the fourth, four; and so on to the last, according to the number of vessels used. Let the dishes so charged, remain over night or during any period of the day, exposed to the air in a quiet corner of the room where the experiment is to be made. On examining them in the morning, or at the end of the period determined on, it will be easy to judge comparatively of the condition in which the atmosphere has been maintained during the time of their exposure. If the solution in No. 1 only has entirely lost its pink colour, the air has been of normal purity; should No. 2 be completely decolorized, the air must have been charged with twice as great an amount of impurity; the total decoloration of No. 3 will indicate the presence of a three-fold quantity of impure matter; the loss of all pink colour in No. 4, or the stronger solutions, will demonstrate degrees of impurity verging more or less on positive pollution.\*

But the utility of the action of the alkaline permanganates on atmospheric impurities, is not confined to the testing of air; the properties which qualify those substances for detecting aerial pollutions, render them likewise fitted for performing the still more important office of air purifiers. The organic contaminations found in the atmosphere, possessing for the most part a more or less complex constitution, analogous to that of organic matter in general, are necessarily of an oxidizable nature, and therefore extremely disposed to enter into combination with active oxygen, and to form with that substance new arrangements of their ultimate elements, which are of very permanent character. Dilute solutions of alkaline permanganates, when exposed to tainted air, present oxygen in a state especially well calculated for being seized upon by such oxidizable impurities. Every particle of those substances which thus undergoes oxidation, represents so much unwholesome matter reduced to an innoxious condition. Were it possible to bring the organic matters as they exist in aerial contaminations, into rapid and intimate contact with the permanganate solution, the process of purification would be instantaneous and complete. This however is, perhaps, scarcely attainable. Nevertheless the destruction and withdrawal of those impurities which obtain contact, must have the effect of lessening the total

\* Mr. E. G. Wood, of 74, Cheapside, London, has for sale, under the name of "Condy's Tell-tale Air Test," a box containing everything requisite for this use of the permanganates.

amount, and consequently of improving the average purity of particular atmospheres, and in most instances, where a local source of taint exists, of bringing into play a counteracting source of purifying influence sufficient to prevent the undue accumulation of impurities.

The following simple experiments will be found rough but ready means of demonstrating the purifying action of Condy's Fluid on atmospheric contaminations:—

*To demonstrate that the exhalations from the Lungs are loaded with Oxidizable Organic Matters.*

Fit a wide-mouthed white glass bottle, with a bung, through which pass two tubes, after the manner of a common sulphurated hydrogen apparatus, one short and the other long enough to reach inside to the bottom of the vessel. Fill it three-fourths full with pure water, slightly coloured with Condy's Fluid (crimson). To the outside end of the longer glass tube fit a flexible caoutchouc tube, capable of being attached by its free extremity, to the nozzle of a pair of bellows. On blowing air through the water by means of the bellows, if no dust be present, but little or no effect will be produced on the colour of the contents of the bottle; but when the bellows is removed, and the mouth applied, so as to introduce the breath from the lungs, decoloration will soon show itself, after setting the bottle aside for a time.

*To detect and purify impure air in rooms, &c.*

Add a tea-spoonful of Condy's Fluid (crimson) to a large jug or ewer of water, and empty the contents, in equal portions, into two hand-basins. Place one of these basins in a water-closet or ill-aired place, and the other in a well-aired hall, or in the open air. After allowing them to remain during several hours, bring them together, and compare the appearances in each. In the former, the water will be found to have lost entirely, or in a great measure, its pink hue, and the surface of the basin in contact with the water, will be covered with a thin coating of brown matter; in the latter, no change, or hardly any, will be remarked. The amount of deposit will be the measure of the impurities taken up and destroyed.

“ Mix one drop of ‘Condy's Disinfecting Fluid,’ or a very small quantity of a very weak solution of permanganate of potash in water, with one table-spoonful of pure water. The liquid should be of a faint pink colour. Drop twenty drops of this liquid into a small

phial or wine-glass, and agitate it in contact with the air to be tested ; organic matter in the air will decolorize the liquid. The quantity decolorized and the time it occupies, indicate respectively the quantity of organic and other oxidizable matter, and its stage of decomposition. They are in direct proportion. This result is owing to the combination of the oxygen combined in the substances in solution in the liquid, and the organic matter in the air, and to the circumstance of the resulting compound being colourless. The above method of testing organic matter in air is a modification of that pursued by Dr. R. Angus Smith."—*Purification of Air*, by J. White, Surgeon, Finchley, p. 2.

"The air test recommended by Dr. R. Angus Smith, Miss Nightingale, and others, is the alkaline permanganates, or 'Condy's Fluid,' which, besides, is itself a vehicle of ozone, and, as a free contributor of it, is in extensive use as a sanitary agent, identical in its nature with the very ozone of the atmosphere itself—the great scavenger and cleanser of nature."—*The Builder*, 6th July, 1861.

"Just as without the use of the thermometer no nurse should ever put a patient into a bath, so should no nurse, or mother, or superintendent, be without the air test in any ward, nursery, or sleeping-room."—*Notes on Nursing*, by Florence Nightingale, note, p. 10.

"The lecturer then alluded to the deleterious effects of organic matter in the air, and to its estimation by Dr. Angus Smith's test, which had proved that the air of Manchester contains, on an average, more organic matter than that of London, in the proportion of 6 to 4, the comparative rate of mortality in the two cities being as 31 to 24. This test had also proved, that the air on the high grounds in the northern suburbs of London contains only about one-third as much organic matter as the air in the City ; that there are human dwellings in our large towns which are surrounded by an atmosphere fouler, as regards organic matter, than that of a piggery ; and that the amount of organic matter in the average London atmosphere is about ten times as great as that in the pure sea breeze."—Dr. E. Frankland, in Lecture delivered at St. Bartholomew's Hospital ; *Lancet*, 5th October, 1861.

"With regard to the other 'admission,' that notwithstanding the good drainage of Windsor Castle, unpleasant smells are complained of in the basement, which point to the probable existence of undetected sources of atmospheric pollution, such as old cesspools, it is suggested that the delicate air tests of Dr. Angus Smith—such as we described last week with reference to the detection of relative impurities in the atmosphere of railway carriages—might be very usefully employed here. The use of the properly applied permanganate solution affords very satisfactory evidence on this important point."—*Lancet*, January 18, 1862.

5, CARLTON HILL EAST, ST. JOHN'S WOOD.

June 6, 1859.

In acknowledging the receipt of the sample of your Patent Disinfecting Fluid, I beg to state that I should have earlier made a report had a favourable opportunity occurred of testing its capabilities in highly poisoned atmospheres. I have now, however, much satisfaction in bearing testimony to its great value. I consider it by far the best disinfectant hitherto brought before the profession, and have no doubt it but requires to be known to the public generally to insure an extensive patronage.

I am, Sir, your obedient servant,

Mr. Condy, Battersea.

H. B. BUNNETT.

"One female patient sank under the lingering suffering caused by cancer. . . . Some reference should be made to the way in which the atmosphere of her room was purified and kept constantly free from that sickening and overbearing aggravation, which was the consequence of this lamentable disease. . . . By the frequent use of an apparatus kindly supplied by Mr. Eugene Rimmell, and 'Condy's Patent Disinfecting Fluid,' her apartment was kept free from that impurity which would have rendered efficient nursing very difficult."

—*Bethlem Hospital Report for 1861*, by Dr. W. Charles Hood, p. 35.

## XII.

## DOMESTIC AND FARM-HOUSE USES.

Condy's Fluid is invaluable for numerous domestic purposes for which, on account of their poisonous and other objectionable qualities, all other disinfectant substances are improper and unavailable. Among such may be enumerated the following:

Washing bottles.

Cleansing wine-casks, beer-barrels, pickling-tubs, dairy utensils, &c.

Purifying soapy and greasy sponges.

Cleansing pots, pans, dish-cloths, &c.

Cleansing and polishing plate and jewellery.

Refreshing the colours of old carpets, silks, and other stuffs.

Cleaning oil pictures.

Removing odours from fustians, flannels, new boots and shoes, &c.

Washing and purifying children's bedding and clothes.

Washing dogs and other domestic animals.

Purifying aquaria, bird cages, &c.

A remedy for tender and perspiring feet.

A purifying and refreshing addition to baths, bidets, and tubs.

Allaying the irritation of flea-bites, mosquito-bites, &c.

Removing bad breath and the odour of tobacco.

Washing the hair.

Maintaining the health of plants in pots and conservatories.

Cleansing wheat and other seeds from smut.

Developing the vitality of old seeds.

Curing musty provender.

Removing taint from meat, fish, poultry, and vegetables.

Washing butter, and removing rancidity and bad flavour.

Imparting mildness and flavour of age to new and coarse spirits.

Purifying drinking and other water.

An antidote to all organic poisons.

A general remedy for the external diseases of animals.

Cleansing foul sores, poisoned wounds and bites, &c.

HOUGHTON-LE-SKERNE,

SIR,

July 28, 1860.

I have much pleasure in bearing testimony to the efficacy of your Disinfecting Fluid as a deodorizer, having now used it in various ways for the last three years. Among other instances, I may mention, that in my dairy where the milk of twenty cows is kept, I have found it of very great advantage for washing the floor (composed of lime and gravel), which was apt, by absorbing the spilt milk, to turn sour. I have a friend, too, who tried it in the case of a dead mouse or rat, which was supposed to rest under a drawing-room floor, and where it completely removed the offensive smell arising therefrom.

It occurred to me to try it in the case of a cow casting her calf in a byre which contained seven others, and at a time when I could not appropriate any separate place for her; and I am glad to say, that it overcame the usual fetid smell experienced on such occasions, and that none of the other cows were in any way affected by taint or infection.

Since I became acquainted with the valuable properties of your fluid I have fortunately not been visited with Lung Disease, though I doubt not, in such cases, it would be found extremely valuable. I must not forget also to speak of a box of grouse, which was sent to me last year from the north of Scotland, by some mistake was forwarded from Aberdeen to London by steam, and thence sent back by rail to Darlington. On opening it the smell was most offensive, so much so, that I despaired of using its contents. Condy's Fluid was thought of, and the grouse were hung up with rags or strips of calico steeped in the fluid, put under their wings and about them, by which the bad smell was removed, and the game kept quite fit for use for several days or a week after.

You are welcome to make any use of this communication you may think proper, feeling as I do, that from the efficacy and cheapness of your fluid, it only requires to be better known in order to be very extensively used.

I am, Sir, your obedient servant,

Mr. Condy, Battersea.

DAVID NESHAM.

10, GRAFTON STREET, BOND STREET, W.

SIR,

September 15, 1857.

Having tested your "Patent Disinfectant," in many cases requiring it, and in all with perfect success, I have no hesitation in stating that it is the best known to me. Its importance for institutions where there are patients who, from imbecility or other causes, have no control over their evacuations is patent; in such cases, as well as in others of a more domestic or even farm-house character, I have used it with such satisfaction that I have instructed a neighbouring chemist to send a gallon.

Yours faithfully,

GEORGE N. EPPS, M.D., M.R.C.S., Eng.,  
Physician to Harrison's Spinal Institution, &c. &c.

Mr. H. Bollmann Condy.

"When in students' lodgings, I employed most successfully a dilute solution of permanganate, to deodorize the rancid butter purveyed by a peculating landlady. In the sick room it is a valuable disinfectant; I have employed it with benefit as a lotion to foul wounds."—Edward Nicholson, *ON DISINFECTANTS, The Field*, Feb. 2, 1861.

"A few drops added to a tumbler of water, will, as I have ascertained, remove instantaneously all the taste and smell which are often so troublesome after smoking pipes or cigars; and it may be used in the same way as a lotion for the skin by those who require such things."—F. T. Buckland, Assistant-Surgeon, 2nd Life Guards. *The Field*, Nov. 24, 1860.

## XIII.

## RESTORES AND MAINTAINS THE HEALTH OF PLANTS.

While the so-called disinfectants, such as the metallic chlorides and various compounds containing sulphurous acid and products obtained from coal tar, manifest their deleterious nature on being applied to vegetation, Condy's Fluid, under the same circumstances, proves itself not only innoxious, but moreover a most powerful agent in restoring and maintaining the health of plants. The following experiment will sufficiently prove the absence in Condy's Fluid of noxious action on vegetation:

Take two flower-pots, containing each a plant of mignonette, or other common household flower; water them both during several days, one with water to which Condy's Fluid has been added in the proportion of a tea-spoonful to a pint of water, and the other with water into which the same quantity of chloride of lime has been thrown. Examine them from day to day, and in no very long lapse of time the latter will be found drooping or dead, while the former will be as flourishing as ever, or even more vigorous in its growth.

WALTON ROAD, NEAR LIVERPOOL,

*August 15, 1860.*

SIR,

I HAVE great pleasure in giving my testimony to the excellent effect of Condy's Fluid on vegetation. Having been troubled with the green fly on my lettuce and other vegetables, I was induced to try the Fluid in its diluted form, and have experienced the most salutary results from its use, in the destruction of all the insects, and the general improvement in the growth of the vegetation. In all my experience of above thirty years as a gardener, I never met with anything to equal it.

I am, Sir, yours respectfully,

Mr. H. Bollmann Condy,  
Battersea, Surrey.

JOHN MUSKER.

BLIGHT IN VERBENAS.—The following paragraph from the Paris letter of a morning paper will suggest to "Fern" a remedy for the disease which has attacked his verbenas:—"Last week the Académie de Médecine was occupied with a discovery which is considered by chemists as destined to be of very great service in combating all unhealthy influences both in the animal and vegetable kingdoms. Oxygen in the peculiar condition distinguished by the term ozone,

which is now admitted to be the great natural purifier of the atmosphere and surface of the earth, is found to be contained in certain combinations of manganese, and to be given off in abundance on contact with every kind of foul and unwholesome matter. By means of those compounds ozone can be made available for the preservation and restoration of health. This important discovery is due to the labours of Mr. Condy, of Battersea, who has already familiarized the English public with the peculiar disinfecting properties of super-oxygenated manganese in the shape of his well-known fluid. Recent experiments which have been made here, have, however, demonstrated that this substance is capable of being applied to other important purposes besides that of mere domestic disinfection. A gentleman in the neighbourhood of Paris, whose vines for several years back have been infested with oidium to such an extent as to prevent their yielding any eatable fruit, has this season succeeded, by the use of Condy's fluid applied as a wash, in securing a very fine crop of grapes. To render the experiment more conclusive, a certain portion of vines was treated with the compound, whilst others were left to themselves. The fruit of the former is at the present time excellent, but that of the latter has entirely shrivelled up and become worthless. Considering the universal part ozonic oxygen is known to play in nature, there can be very little doubt that the vine disease is only one of an endless chain of morbid manifestations over which this ozonized fluid will be found to exercise an effectual control. Now that this subject is taken up by the learned bodies of Paris, it is probable that they will not rest satisfied with such isolated facts as have been obtained in England respecting the disinfectant power of those compounds of manganese, but follow it up and develope it into a connected and universally applicable system of hygiene."—*Morning Post*, Sept. 24, 1861.) I have no doubt that the ozonic oxygen contained in Condy's fluid will be found equally effectual in combating the blight to which other plants are subject, especially that of the potato; very probably also that to which the mulberry-tree is subject. It is of course too late this year to make further experiments in this direction, but those who are practically interested in the subject would do well to take particular note of the above paragraph, which fully bears out the observations reported some six months ago in *The Field* by a correspondent.—Correspondence in *The Field*, 5th October, 1861.

SIR,

COMPTON, NEAR PLYMOUTH,  
October 23, 1861.

Your Disinfecting Fluid having been recommended to me, I have tried it for the potato blight, which has prevailed a good deal here, and found it do much good in arresting the spread of the disease. I hope, if spared another season, to give it a further trial in many ways, and intend recommending it to all our neighbouring growers of potatoes, &c.

Mr. H. B. Condy,  
Battersea.

Your obedient servant,  
RICHARD NORTHMORE,  
Gardener.

“GRUB IN ONIONS.—I think if M. A. S. will water his onions with “Condy’s Patent Disinfecting Fluid,” in the proportion, say, of a pint to a bucketful of water, he will effectually rid his onions of the grub. I tried it last summer upon a path infested with worms, and it caused them to quit rapidly; and I have no doubt the grub would do the same. The expense is trifling, a gallon of the fluid only costing 5s. It can be had through any chemist, or direct from Mr. Condy, at Battersea.—VANDERDECKEN (Oxford).”—*The Field*, August 23, 1862.

## XIV.

## REMEDY FOR MANY DISEASES OF DOMESTIC ANIMALS.

As a remedy of extraordinary efficacy and very general application in the treatment of the diseases of domestic animals, Condy's Fluid stands pre-eminent over every other preparation of the kind, besides constituting a most effective check to infectious and other unwholesome influences.

The marked tendency of many of the diseases of domestic animals to assume a contagious type, has long rendered the discovery of an efficient but safe and innoxious disinfectant of the living tissues a recognized desideratum in Veterinary Surgery. Metallic salts, such as those of mercury, copper, antimony, zinc, &c., the mineral acids, chloride of lime, and compounds containing tar, creasote, &c., have hitherto been the agents chiefly relied on. Besides being very deficient in true cleansing properties, all those substances are highly objectionable on account of their irritating, penetrating, and poisonous effects. The qualities required in an article intended for the treatment of the great majority of the affections of live stock, are power thoroughly to decompose and consume morbid matter however virulent, and sufficient stimulating effects to rouse and promote healthy action, coupled with a truly wholesome and innoxious nature—soothing and allaying irritation, yet at the same time detergent and healing. All of those important properties are combined in Condy's Fluid, with the additional advantage that it is not only the most effectual of all local remedial applications, but likewise an invaluable purifier of the constitution when used as an internal medicine, for which the health-promoting and invigorating character of its active principle—oxygen—especially qualifies it. Being composed on natural principles, this preparation while it is specially calculated for cleansing and correcting everything of a foul and unhealthy character, is at the same time so mild and benignant in its effects, that even when employed in the most concentrated form as a caustic, its application can be repeated almost to any extent without fear of irritation. For the same reason it can be used without risk in its more dilute and milder forms, by the least experienced person, and on the most tender and delicate subjects, including poultry, singing birds, the inmates of aviaries, and all cage animals, fish and the inhabitants of ponds, tanks, and aquaria, as well as horses, cattle, sheep, pigs, dogs, and domestic animals in general.

There would seem likewise good grounds for expecting, that the purifying influence of the permanganates might be found of great use in abating that scourge of southern countries—the disease of the silk-worm.

1, HIGH STREET, VAUXHALL CROSS,  
June 16, 1857.

SIR,  
I have used Condy's Patent Fluid, or natural Disinfectant, in my stables and yard, and feel perfectly satisfied with the result. It renders them sweet, cool, and comfortable. My next door neighbour used it in his drain, which was in a bad state, and its effect was to destroy the smell. I shall feel pleasure in recommending it.

Yours truly,  
G. HOWLETT.

53, GREAT MARYLEBONE STREET,  
PORTLAND PLACE, W.

SIR,  
September 3, 1858.

I have refrained from giving any opinion on the properties of your Patent Fluid, until I had given it a full and fair trial; this I have done, having used it undiluted as a detergent and exitant to several cases of disease in the heels and feet of horses, and as a first dressing for foot-rot in sheep. In crowded, close, and ill-drained stables, I have also recommended its use, and in each case with the most marked success. I am now just returned from attendance on a kennel of hounds in which virulent distemper had broken out; here I used it diluted as a deodorizer and disinfectant, sluicing, washing, and sprinkling everything with it, with an effect far surpassing any of the compounds of chlorine I have generally used, as it completely destroyed the offensive smell, without causing the injurious irritation always produced by chlorine on the already irritated mucous membranes of the dogs suffering from this malady.

In short, Sir, I consider it a boon to the veterinary profession and the sportsman, and a benefit to humanity at large.

Yours respectfully,  
W. H. KENT, M.R.C.V.S.,  
Consulting Veterinary Surgeon, and  
Canine Pathologist.

H. Bollman Condy, Esq.  
Battersea, Surrey.

“CONDY'S PATENT FLUID.—I can safely recommend this article for cow-houses, badly-drained stables, &c. It appears to me to be a most valuable and healthy life-preserved.”—F. T. Buelkland, Surgeon, 2nd Life Guards, in *The Field*, November 24, 1860.

“DISINFECTANTS IN STABLES, COW-HOUSES, KENNELS, &c.—Sir William Burnett's fluid is a virulent poison, the more dangerous because it is colourless, and gives no warning to the eye of its fatal powers. If no other substance could be found which would act

equally well, we should waive this objection; but as we have practical reasons for coming to the contrary conclusion, inasmuch as we have a far more harmless, and yet more powerful disinfectant in the solutions of the alkaline manganates and permanganates, patented by Mr. Condy, and sold under his name, we can strongly advise our readers to test this new agent by a careful trial, whenever they may require a disinfectant for their own houses, or for removing the injurious effects experienced when their domestic animals are attacked by any endemic or epidemic disease.

We do not profess to bring this matter before the public as by any means an absolute novelty, inasmuch as it has now been before them for three or four years; and indeed our talented contributor, Mr. Buckland, has already mentioned some of the peculiar advantages of Condy's fluid in our columns. But having recently compared its effects with those of Sir William Burnett's fluid, in disinfecting kennels suffering from the effects of distemper, and also certain emanations proceeding from the human being, we lay the results of our experience before our readers for their use and benefit.

Cleanliness, aided by good drainage, is undoubtedly quite sufficient to maintain every properly-constructed stable, cow-house, and kennel, in a state fit for their tenants, provided they retain their ordinary health. But where influenza, distemper, or other similar disease prevails among any of our domestic animals, it is desirable to destroy the emanations given off from their morbid secretions as fast as they are developed, and if possible, to prevent their formation."—*The Field* (editorial), January 26, 1861.

"CONDY'S FLUID.—The following facts, which have occurred in my domestic circle during the last few days, I am induced to forward to you, in the hope that they may prove of service to those who have read the interesting article on Disinfectants which appeared in *The Field* of January 26th. They prove, so far as they go, that the claim which you state is put forward on behalf of Condy's Fluid to rank as a 'valuable local application to the wounds and sores of domestic animals,' is not made without some show of justice. Two domestic pets—a kitten and a lark—have experienced the benefit of treatment by this fluid. The kitten suffering from distemper and violent inflammation of the eyes, was despaired of, and likely to share the fate experienced by the other members of its family, all of them similarly affected, namely, death by drowning, but for my recollection of the beneficial effects of this fluid in some cases of human suffering. The kitten's eyes were bathed with the fluid diluted with water, and on the third day, to my surprise (for I believed blindness to have occurred), they showed signs of improvement, and in one week after purifying them four times daily, in this manner, a cure was effected. The lark's case was this. It had been neglected during the cold weather, and had consequently become lame—almost helpless—from sore feet, and had lost a toe. Immersion in the diluted fluid and bathing the feet well gave quick relief, and the feet seemed quite healed in twenty-four hours. They were only bathed

three or four times. I could relate many valuable domestic employments I have found for this fluid."—Correspondence in *The Field*, February 9, 1861.

HIGH STREET, BATTERSEA, S.W.

Observing that Condyl's Fluid has been in a manner put upon its trial as a veterinary remedy, in the columns of *The Field*, I take the liberty of offering you my experience of its effects in practice.

Shortly after Condyl's Fluid was first brought out a sample of it was handed to me for trial, but finding it to be entirely destitute of smell, and possessed apparently of few sensible properties in proportion to its very deep colour, I felt so doubtful of its activity that I laid it aside as hardly worthy of even being tested as a common disinfectant. Having about three months back to treat a case of cancerous sore in a horse, which emitted an extremely offensive odour, I was induced to apply it to the affected part. The destruction of the smell was both rapid and complete. I was greatly struck with the result, and from that day no longer had any doubts respecting the efficacy of this preparation.

Since then I have employed Condyl's Fluid extensively in my practice as a topical application, and find it superior in detergent properties to every other agent which I had formerly been in the habit of using. I have applied it with great advantage in several bad cases of grease in the heels of horses, as a dressing before and after operations in two cases of cancerous and malignant affections, and as a lotion and injection to the nostrils of a horse suffering from farcy, with a foetid discharge from the nose, and which belonged to the London Extension Railway Company.

In the cases of grease this fluid (crimson) was used undiluted, and in the others in the dilution of a wine glassful to a quart of water.

I have also had numerous opportunities of testing the detergent and healing properties of this fluid when applied as a wash to the heels of horses in an offensive state previously to shoeing. Used as a general disinfectant in pigeon-houses, aviaries, and other places where animals are kept, when disease has prevailed I have found Condyl's Fluid, in the dilute form, of very great advantage in destroying morbid matter and arresting contagion.

This preparation possesses, in my opinion, one characteristic which must render it peculiarly valuable to country gentlemen. It is applicable not merely to one or two cases, but to all in which there is any foulness to eradicate; to every kind of animal; also to plants and to all sorts of matter.

*The Field, May 4, 1861.*

W. F. CROSS, M.R.C.V.S.

LOW'S CATTLE LAIRS, YORK ROAD, ISLINGTON,

SIR,

September 8, 1862.

In my capacity of foreman to a cattle salesman and large importer of foreign stock, I beg to testify to the salutary effects realised by the use of your Fluid among cattle. As manager of the

above-named lairs, I have used the Fluid with *complete success* amongst thoso beasts affected with "mouth and foot disease;" with fresh calved cows I have also found it invaluable.

Its use among horses is much to be desired, not only as a disinfectant, but likewise as a remedial agent.

Should you think proper to refer any one to me I shall be happy to afford proof of the good results obtained from your Patent Fluid.

Your obedient servant,  
JOHN DREW WALLER.

Mr. H. B. Condy, Battersea.

"DISTEMPER.—I have never lost any dog from distemper after successful vaccination; generally my well-vaccinated dogs have escaped altogether. I believe, however, good ventilation, scrupulous cleanliness, the free use of Condy's Fluid, and a change of diet, to be the great preventives of this scourge."—Correspondence in *The Field*, August 30, 1862.

## XV.

## VALUABLE SANITARY AGENT IN SCHOOLS.

The fact that the emanations from the bodies of large numbers of persons closely congregated in rooms are particularly injurious to the delicate and impressionable frames of children, renders Condy's Fluid which acts by imparting oxygen, peculiarly applicable for the purposes of purifying and disinfecting schools and class-rooms.

UPPER SYDENHAM,

DEAR SIR,

*July 30, 1857.*

I am pleased with the results of the use of the Disinfecting Fluid at the U. S. I. Schools, as far as I have seen them. Will you send me a gallon bottle (or two gallons) in order that I may experiment with the substance at leisure at my own home?

Yours obediently,

H. B. Condy, Esq., Battersea.

F. E. WILKINSON.

KIRKDALE, *January 12, 1858.*

Condy's Disinfecting Fluid has now been used at the Industrial Schools for several months, as a deodorizer, with the most satisfactory results. I have, therefore, much pleasure in bearing testimony to its value.

EDWARD PARKER, F.R.C.S.,

Surgeon to the Industrial School.

FREE INDUSTRIAL SCHOOL, KIRKDALE, LIVERPOOL,  
*March 10, 1858.*

I have much pleasure in stating that "Condy's Disinfecting Fluid" has been used, with very great effect, in various parts of this establishment. It has effectually cured the noxious vapours in the sewers about my own house.

WM. COATES, Governor.

*August 4, 1862.*

Having used Condy's Disinfecting Fluid in the Gascoyne Place British School during the last twelve months, I am glad to be able to testify to its efficacy. With an attendance of 150 children, it purifies the atmosphere and keeps it comparatively free from noxious vapours.

JOHN STONEHOUSE, Master.

## XVI.

## THE SICK ROOM.

Pure air being of much greater importance to the sick than to the well, and the emanations from the human body being generally more noxious during sickness than in health, it is evidently of very great importance to maintain the purity of the sick room. While bearing in mind that "no chemical disinfectant can supply the place of cleanliness and ventilation," those who have the charge of the sick may with confidence employ Condy's Patent Fluid as a valuable auxiliary, seeing that it contains, in a concentrated form, the very agent—oxygen in an active condition—by which ventilation operates. By the use of Condy's Fluid, in addition to cleanliness and ventilation, Miss Nightingale's first nursing precept, namely, "Keep the air breathed by the patient as pure as the external air," may even in certain instances be surpassed; since by its means the air of a chamber can be rendered *purer* than the external atmosphere, when the latter as in crowded and unhealthy localities, is under the normal state of purity.

1, SAVILE Row, W.,  
June 11, 1857.

I have great pleasure in bearing my testimony to the favourable effects of "Condy's Patent Fluid," as a speedy and efficient deodorizer. In removing the smells from drains, cesspools, manure heaps, and any form of decomposing vegetable and animal substances, it is very effective. It may also be used with advantage in the sick room, and, in fact, wherever the object is to prevent the giving off of unpleasant odours, or the arrest of putrefactive processes which are attended with the discharge of strongly smelling gases.

EDWIN LANKESTER, M.D., F.R.C.S.  
Medical Officer of Health of St. James's Westminster.

I have much pleasure in bearing testimony to the value of Condy's Disinfectant, in destroying the effluvia of sick rooms and the evacuations from the sick, and in counteracting the effects of decomposition of the body after death.

CHARLES EVANS REEVES, M.D.  
Author of *Diseases of the Stomach and Duodenum, Diseases of the Spinal Cord and Paralysis, &c. &c.*

14, FINSBURY CIRCUS, E.C., LONDON,

SIR,

October 11, 1858.

You were kind enough to send me some time ago a bottle of your excellent preparation for purifying sick rooms and removing offensive odours, &c. I write to mention to you, that I have used, and in my practice have directed the same to be employed for the purposes you have described, and it is but fair to tell you, that my experience of its use fully justifies every assertion you have published of its value. I shall certainly continue to advise its employment in all cases for which it is adapted, and do esteem it as not only in every way preferable, but superior in its effects to chloride of lime.

Yours truly,

HENRY STEVENS,

H. B. Condy, Esq.

Surgeon to the Islington Dispensary.

78, WARWICK SQUARE, BELGRAVIA,

October 23, 1858.

I have much pleasure in bearing my testimony to the value of "Condy's Patent Fluid" as a disinfectant. I have had ample opportunities of testing its properties, and in every case it has proved highly efficacious in removing putrid effluvia. I consider it a remedy of great value (used topically) as well as a most important agent in the management of the sick room.

WILLIAM GROVE GRADY, M.D., M.R.C.S. E. & I.  
Medical Officer to the Pimlico General Dispensary.

PORTLAND HOUSE, BATTERSEA,

December 18, 1861.

Having been several years in the habit of employing and prescribing Condy's Fluid as a general disinfectant and deodorizer, I can without hesitation state, that it answers admirably for such purposes. It has never once failed in my hands. I have found a marked purifying effect to be produced in the atmosphere of the sick room, by mingling a small portion with the water thrown up in the form of a jet from a portable spring fountain. Having in several instances proved its efficacy in preventing the spread of contagion, I can strongly recommend Condy's Fluid to medical practitioners, and the heads of schools and public institutions.

GEORGE SHAW, M.R.C.S., &c.,  
Fellow of the Obstetrical Society, London.

## XVII.

## BODILY ABLUTIONS AND THE BATH.

The composition of Condy's Fluid, and the character of its principal constituent as the agent by which the purity of both water and air is naturally maintained, point it out as being remarkably well calculated, by its use in ordinary ablutions and the bath, to aid in securing purity and freshness of body. Though not qualified to take the place of soap, it is extremely useful as a supplementary detergent to that familiar substance, in many cases for which mere washing with soap and water is insufficient. On account of its energetic action on all morbid and offensive matters, it is of peculiar efficacy in removing secretions and overcoming infection. Added in sufficient quantity to entire or partial baths, whether cold or warm, Condy's Fluid will be found, by its oxidizing properties, not only to increase their cleansing effects, but, through its influence on the vessels and nerves of the skin, to improve the tone and promote the invigoration of the whole system. Its results are of especial importance in the warm bath, which, as usually taken, has the disadvantage of retaining the effete products thrown out by the exhalant and excretory organs of the skin after continued immersion, to say nothing of the organic impurities which are very generally present in the water before the bather enters it: \* those matters which are of all things the most unfit to be re-introduced into the system, are neutralized and removed by the permanganate of the Fluid almost as soon as they are exuded. In this manner the water of baths is maintained in a constant state of purity, which it may not perhaps be going too far to expect to be productive of important purifying effects on persons of tainted or vitiated constitution, or, during the period of incubation, on those who have incurred the inoculation of canine rabies or other blood poisons. The following are the directions for using Condy's Fluid for ablutory purposes :

**WARM AND COLD WATER BATHS.**—Throw in half-a-tumbler of Fluid previously to entering the bath, and stir till it is generally diffused. As the pink colour disappears add more Fluid.

**SITZ BATH.**—Use as above two to four wine-glassfulls of Fluid, according to the size of the bath.

\* It would be instructive to test for organic matter, the water with which warm baths are usually supplied. There is little doubt that it would be found, in most instances, highly charged with contaminations of organic origin.

FOOT BATH.—One wine-glassful of Fluid.

BIDET.—One or two table-spoonfuls of Fluid.

N.B.—Care must be taken not to introduce any portion of soap into the water with which the Fluid is mixed.

“Any one conversant with those suffering under this disease [mental insanity], cannot fail to perceive that there is a peculiar odour of a most disgusting kind emanating from their persons, and most probably exhaled from the skin and its minute glands and follicles. Now this probably arises from an unhealthy state of the blood, which must exercise a deleterious influence on the system generally, and on the organs connected with operations of the mind in particular, and any means which effect the removal of the vitiated humours and other secretions, must benefit the disordered intellect, and probably cure the diseased and tainted system.”—Report of Dr. Thomas Power, Resident Physician to the Cork District Lunatic Asylum. *The Times*, May 11, 1861.

“The full access of all healthful stimuli to the surface, and freedom from all that irritates or impedes its functions, are the first external conditions of the normal vigour of this nervous circle. Among these stimuli, fresh air and pure water hold the first place. The great and even wonderful advantages of cleanliness, are partly referable to the direct influence of a skin healthily active, open to all the natural stimuli, and free from morbid irritation upon the nerve centres of which it is the appointed excitant. This influence is altogether distinct from those cleansing functions which the healthy skin performs for the blood.”—*Cornhill Magazine*, February, 1862, pp. 165–6.

“As a gift of science, constituting a safe-guard against disease this disinfectant is invaluable. Its effect, when used for the skin or for rinsing the mouth in fevers, &c., is equally wonderful.”—*The Electrician*, Nov. 16, 1861.

DEAR SIR,

MUNICH, July 19, 1862.

The pareel of permanganate was duly delivered to Dr. von Pfeufer. I have myself made a series of experiments which have convineed me that your statements about the excellent effects of your Disinfecting Fluid in destroying bad smells, as well as the unwholesome eontaminations to which drinking water is subject, are perfectly correct. It has proved itself of very great service for purifying the mouth, and washing the feet and other parts of the person. I consider it an inestimable means for the preservation of the health.

Mr. H. B. Condy, London.

Yours truly,  
J. LIEBIG.

## XVIII.

## PURIFICATION OF BEDDING.

A large number of diseases must be considered to have their principal cause, in one form or another of uncleanness. Of the many varieties of uncleanness, there are few which exercise so deleterious an influence as that of bedding—all the more dangerous because in general unsuspected and overlooked. Nearly one-third of our existence is spent in bed, which, while we are in it, forms a sort of hot air-bath, that must be of great importance for good or evil, according to the qualities it may happen to possess.

Transpiration, as a general rule, proceeds more freely in bed, than in most other ordinary circumstances. The warm vapours exhaled from the body, for the most part, pass off through the blankets, &c., which cover the sleeper, but they also pass downwards, as is proved, for instance, when a person goes to rest in a tent, on a bed spread on the ground upon a waterproof sheet. In such circumstances, the *under* side of the mattress on which he has lain, will be discovered, in the morning, to be damp from perspiration. The bedding we lie upon, therefore, is subject to become imbued with the matters exhaled from the person, as well as the articles with which we cover ourselves while in bed. Those matters, whatever their condition, are absorbed and condensed in the porous substance of the bedding, and there retained to be increased by constant use. After prolonged occupation, consequently, a bed cannot but contain a very large amount of impure matter. Fortunately there goes on simultaneously, but in varying degrees, with this gradual pollution, a natural process of purification, without which bedding would soon become a fatal focus of infection. The fall in temperature which takes place after the sleeper rises, naturally draws into the pores of the bedding the surrounding air, which, as in other porous bodies, has the property of neutralizing the organic constituents of bodily exhalations; and this process is the more complete, according as the bed is more or less thoroughly exposed to the air. But the airing to which bedding is usually subjected, when not entirely neglected, as is too commonly the case, is a very imperfect remedy against the accumulation of foul organic products, and more particularly so in hospitals, where the bodily emanations of the inmates are usually of a more or less abnormal character, and in the

dwellings of the poor, whose beds are constantly in use, often overcrowded, and so solidified by pressure as hardly to admit of penetration by the air.

As in everything connected with the sanitary improvement of the lower classes, many impediments stand in the way of the maintenance of purity in their bedding. Among the better classes and in public institutions, however, there ought to be no difficulty in adopting measures for guarding against foul beds. The main impediment is the want of information on the subject, and the very prevalent notion that the constant use of a bed is the same thing as airing it. How often do we hear it said, "Oh! Sir, the bed cannot want airing, for it has been constantly slept on." If people as a general rule would use horsehair beds or mattresses, and have them periodically taken to pieces and cleaned, the risk of contamination and its consequences would be very much diminished. This material admits of washing and doing up at home without the aid of an upholsterer, and though expensive to purchase at first, it is in the long run the most economical. An ordinary doctor's bill saved would go a long way to purchase a good hair bed. Hospitals ought to have no other kind of bedding than well made horse-hair mattresses, except water-beds for special cases. At least once a quarter, and uniformly after occupation by a patient suffering from infectious or virulent disease, they should be undone, carded, and thoroughly washed in a weak solution of Condyl's Fluid, which would effectually eradicate every trace of impure matter. As at present managed, hospital beds, and especially those of lying-in institutions, are but too liable to become what dc Luna of Madrid calls them, "gasometers of infection" for the unfortunate patients, whose cases, slight perhaps at first, through their deleterious influence acquire the character of fatal disorders.

By a very simple experiment the presence of foul matter in old beds, can be demonstrated. Withdraw a small portion of the stuffing from a bed which has been long in use, and wash it carefully in a little pure water. Wash, in the same quantity of water, an equal portion of similar material which has never been slept upon. Test the two samples of water as directed at page 32, and it will be seen, that that which has come from the old material, will decolorize a much larger quantity of dilute Condyl's Fluid than the other.

"There is one source of infection to which insufficient attention—or indeed no attention at all—has been directed, namely, the impure state of the bedding used by many persons of the middle classes, and of those below them, although not the poorest. The beds consisting

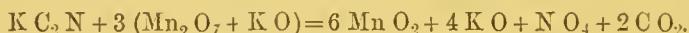
chiefly of feathers or wool, always of animal substances—having imbibed the effluvium and perspiration of persons who have slept on them during many years, or even during generations, without having once undergone purification—have become more or less contaminated by continued use; and it cannot, therefore, be a matter of surprise, if in certain occasions of prolonged occupancy, and in some atmospheric conditions, an offensive effluvium should be evolved from them productive of infection or contamination to the susceptible and predisposed. That a contaminating effluvium is actually evolved from foul beds, I believe, because I have seen proofs of this cause of dangerous disease, and hence more notice should be taken of this source of infection than it has hitherto received.”—Copland’s *Dictionary of Medicine*, Puerperal Disease, vol. III, part 1, p. 490.

## XIX.

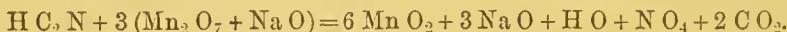
## ANTIDOTE TO ORGANIC POISONS.

In addition to its efficacy in neutralizing ordinary offensive products, Condy's Fluid has the property of decomposing and completely destroying all kinds of organic poisons, whether those of definite composition, such as hydrocyanic acid and the poisonous alkaloids, or those of undefined constitution like the poisons of rabid and diseased animals (malignant anthrax), reptiles and insects, sausage poison, and those virulent matters occasionally generated in the partially decomposed bodies of animals and human beings, which cannot but be considered of a complex consistent nature analogous to that of the generality of animal substances. The comportment of those matters with permanganates will be made clear by the following symbols:

## CYANIDE OF POTASSIUM.



## HYDROCYANIC ACID.



## STRYCHNINE.



## VERATRINE.



## UNDEFINED ANIMAL POISONS.



“ANTIDOTE FOR ORGANIC POISONS.—In the communication alluded to I mentioned, in the course of a discussion on permanganate of potash (Condy's Fluid), that, if promptly administered to an animal poisoned by strychnine, the permanganate of potash might be very serviceable. I found, by experiment, that it had decided antidotal powers, and can recommend its employment when it can be administered in time.—EDWARD NICHOLSON.” *The Field*, Aug. 30, 1862.

## XX.

## OBSTETRIC PRACTICE.

During and immediately after parturition, the condition of the organs chiefly involved, and that of the circulatory and nervous systems are such as to give rise to a state of body in which, under certain circumstances, a morbid influence of a most fatal character is liable to be communicated to the system from a local source, the result of which shows itself in puerperal fever. It is perhaps impossible, in the present state of knowledge on such subjects, to explain, satisfactorily, the process by which those virulent effects are produced, or to say how far they are due to causes originating in the body of the patient, or to the communication of some external infection. As the contagious nature of puerperal fever, however, does not admit of reasonable doubt, the disease must be regarded as the offspring of an animal poison; and from whatever sources may be derived the influences brought into operation for its production, there is abundant reason for assuming that the morbific material in question is of a constitution to be neutralized and destroyed by the action of ozonie oxygen. Such being the case, nothing can be clearer than the benefits which the alkaline permanganates are capable of affording in obstetric practice, not only as general disinfectants against extraneous infection and contagion, but as topical applications used for the purpose of reducing morbid action, already developed, and counteraacting unwholesome influences which may have escaped the operation of general disinfecting precautions. It is impossible not to suspect that if the peculiar purifying properties of the permanganates were fully recognised and taken advantage of by obstetric practitioners, we should not have to deplore the lamentable mortality which from time to time reigns in lying-in hospitals.

Dry applications being by many persons considered preferable to liquids for obstetric purposes, the author would recommend to those who are of this opinion, his **PATENT HEALTH POWDER**, which contains solid permanganates in an extended form, and is peculiarly suited for use as a local deodorant and disinfectant. A table-spoonful of this Powder, mingled with four table-spoonfuls of very fine bran, and enclosed in the folds of the ordinary pudendal napkin, will be found effectually to destroy the disagreeable emanations peculiar to the lying-in state, and thus to promote recovery, and prevent the occurrence of puerperal fever.

" Hospital obstetric succour is almost as fatal in London as abroad. At this moment two of the metropolitan lying-in institutions are closed as the only means of suppressing puerperal fever."—*Lancet*, January 25, 1862.

" The obstetrician knows that puerperal fever may be communicated from one patient to another by direct inoculation, the charged fingers or clothes of the accoucheur being the medium of infection. He also knows that fever may be generated in a lying-in woman by the absorption of her own foul secretions, or by the absorption of cadaveric matter which is only perceptible by the smell on the fingers of the anatomical student. Puerperal fever is not, indeed, cholera, nor is it, as far as we know, typhoid fever. Yet the alliance of puerperal fever, with other forms of fever presumed to be different, is at times strikingly manifest. The non-pregnant nurse, or the newborn infant, will take erysipelas from the puerperal-fever patient. The form of the fever developed depends, then, sometimes upon the condition of the patient."—*Lancet*, Nov. 23, 1861.

" Any practicable means which, without much trouble and at a cheap rate, will safely and effectually relieve the parturient female of all disagreeable smell about her apartment, bed, or person; which will make the patient more comfortable, and less loathsome to herself and friends; and which will at the same time assist in preventing the generation of miasma, or lessen the danger from the poisonous influences associated with putrid or morbid effluvia,—must be hailed as a great addition to the *materia medica* of obstetric medicine."—On Deodorization in Obstetric Medicine, by Dr. Thomas Skinner; *Medical Times and Gazette*, Sept. 8, 1860.

" I do believe that if any man should ever have the good fortune to detect or suggest any simple and practicable measures, either to avert and prevent, or to mitigate and cure, surgical and puerperal fever, he would in doing so confer one of the greatest of all possible benefits upon the advancement of surgery and midwifery, and be the means of saving numerous lives in operative and obstetric practice. The discovery of any such measure or measures would undoubtedly form a most important era in the march of professional discovery, nor does it seem utterly hopeless to expect the possible detection of some such measures, in the way of prevention at least, if not in the way of cure."—Professor Simpson (1850), quoted by Dr. Skinner; *Medical Times and Gazette*, September 15, 1860.

" The experience which I have acquired during a fifteen years' attendance in three lying-in hospitals, in all of which puerperal fever prevailed in a high degree, convinces me that that disease is, without any exception, a fever arising from the absorption of decomposing animal matter. The first consequence of absorption of such matter is decomposition of the blood; the results of decomposition of the blood are exudations.

"The decomposing animal matter which when absorbed causes puerperal fever, is, in by far the greater number of cases, communicated to individuals from without, constituting external infection. These are the cases which exhibit puerperal fever in the epidemic form; they can be guarded against."

"In some rare instances, the decomposing animal matter whose absorption is the source of puerperal fever, is generated within the limits of the parts affected. These are cases of self-infection, and they cannot all be guarded against."—Dr. Semmelweis, of Pesth, on the Origin and Prevention of Puerperal Fever; *Medical Times and Gazette*, June 7, 1862.

"I believe that cases of puerperal fever occurring in succession to the same practitioner are examples of something more than ordinary contagion, operating through the medium of a tainted atmosphere. I believe them to be instances of direct inoculation. Recollect, that the hand of the accoucheur is brought, almost of necessity, into frequent contact with the uterine fluids of the newly-made mother. Recollect—those among you who have examined the interior of the dead body with your own hand, recollect—with what tenacity the smell which is thus contracted clings to the fingers, in spite even of repeated washings; and whilst the odour remains, there must remain also the matter that produces it. Recollect how minute a quantity of an animal poison may be sufficient to corrupt the whole mass of blood, and fill the body with loathsome and fatal disease. . . . .

Reflecting on these facts, you will see too much likelihood in the dreadful suspicion, that the hand which is relied upon for succour in the painful and perilous hour of childbirth, and which is invoked to secure the safety of both mother and child, but especially of the mother, may literally become the innocent cause of her destruction; innocent no longer, however, if after warning and knowledge of the risk, suitable means are not used to avert a catastrophe so shocking. . . . .

"Mr. Storrs, of Doncaster, has shown, that the mischief does not always originate in the practice of midwifery. The infecting virus is liable to be carried, not only from one parturient woman to another, but from various other sources of animal poison; the circumstances of childbirth rendering the mother peculiarly susceptible of such contagion. More than one series of these fatal maladies have been traced back to the attendance of the accoucheur, at the same period, or just before, upon some case of erysipelas, of sloughing sores, of external gangrene, of typhus fever, and even to his recent presence at the examination of some dead body."—Watson's *Lectures on the Principles and Practice of Physic*, Lecture lxv., vol. ii., p. 385 (1838.)

"I may conclude this part of my subject by stating, that the fact of the contagious nature of this malady is completely set at rest by the above evidence, especially when it is undisputed that within the walls of lying-in hospitals, a miasma is often generated as palpable to the senses, and even sometimes much more so, than the fumigations

used to destroy it, so tenacious as often to withstand the common measures of purification, and, when generated, more deadly than the plague, if not arrested at its commencement by the most prompt and efficient means. I may further add, that the Boards of Health, or the other medical institutions of a country, should have the power of coercing or of inflicting some kind of punishment on those who recklessly go from cases of puerperal fevers to parturient or puerperal females, without using due precautions; and who having been shown the risk, criminally encounter it, and convey pestilence and death to the persons they are employed to aid in the most interesting and suffering period of female existence."—Copland's *Dictionary of Medicine*, Puerperal Disease, vol. iii., part 1, p. 508.

"Dr. Tyler Smith said, the subject of puerperal fever was the most important which could occupy the attention of the Society. The whole obstetric mortality of England and Wales exceeded 3,000 annually. Of this number of deaths more than 1,000 women, or nearly three daily, fell victims to puerperal fever; and it was the healthy and vigorous primapara whom it was most prone to attack. The obstetrician could put before him no nobler object than the diminution of this mortality. Unhappily, we could not look to treatment to accomplish this. Under various circumstances, and in different countries, every variety of treatment had been tried and found wanting. If not curable, it was however preventable. It was not, therefore, to treatment, but to prevention, that we must look for the means of dealing with it successfully. If epidemics of puerperal fever were less rife now than in former times—and at present they rarely occurred, except from the crowding of women in lying-in hospitals—it was because we lived under better sanitary conditions, and paid more special attention to preventive measures. We should surround every lying-in woman, as far as possible, with antiseptic [disinfectant] precautions. Nothing, he believed, would tend more to diminish the frequency of puerperal fever than the full recognition of its infectious and contagious nature in whatever way it first occurred. . . . If all our means, in the way of prevention, were habitually brought into operation, he did not doubt that puerperal fever, instead of being the highest, might become a very moderate cause of obstetric mortality."—Dr. W. Tyler Smith, at Obstetrical Society of London, November 6, 1861.

"Dr. Semmelweis has traced the great prevalence and mortality of puerperal fever, in some of the obstetric wards of the Vienna Hospital, to the transmission of cadaveric poison from the hands of the male accoucheurs. The precaution of always washing the hands in solutions of chlorine before making an examination, has been attended with the most marked success in arresting the occurrence of the disease. Thus the mortality, which was 9.50 per cent. in 1840, 8.44 in 1841, 16.98 in 1842, 9.57 in 1843, 8.91 in 1844, 16.98 in 1845, 13.68 in 1846, fell to 5.21 in 1847, and to 1.27 in 1848, the two years in which this precaution was first introduced.

The patients having been attended in two departments, in the one by medical men, and in the other by midwives, the mortality in the hands of the latter had been 32, while it was 600 out of the same number of cases under the care of the former. The same relative mortality attended a change of place, and was attributed to the circumstance of post-mortem examinations having been made by the male accoucheurs.—*London Medical Gazette* (October, 1850), xl., p. 631).

“DEODORIZATION IN OBSTETRIC MEDICINE.—“Sir,—The very important paper of Dr. Skinner on the above subject leads me to suggest that ‘Condy’s Patent Health Powder,’ the composition of which is, I believe, commonly known to medical men, will probably be found equally or more effective than any other application in the cases stated by Dr. Skinner. The oil of tar and lime will only retard the decomposition of organic matter, while the Health Powder will decompose it; and the latter can be readily procured at small cost by the poorer class, and that is the class that needs it. It may be used in the manner directed by Dr. Skinner for the use of the oil of tar powder.”—Mr. J. White, M.R.C.S., Finchley, *Medical Times and Gazette*, September 29, 1860.

“SIR,—Your columns have recently given us the advantage of a discussion of the virtues of several deodorants in respect to the lochial discharge, all having reference to applications to be used with the aid of the ‘napkin.’

It occurs to me to inquire, whether it be not better to apply the remedy at the source of the evil—to alter the character of the discharge. My own experience is that the injection of a suitable deodorant is a remedy safe and effectual, promptly destroying the effluvium, and, after a few repetitions, preventing its recurrence. I have used a solution of chloride of soda (hypochlorite of soda), and recently have preferred Condy’s solution of permanganate of potash, in each case diluted with water.”—Mr. W. Haslewood, M.R.C.S., Darlington; *Medical Times and Gazette*, December 1, 1860.

## XXI.

## INTERMENTS, POST-MORTEM EXAMINATIONS, &amp;c.

The decomposition of animal matter is generally attended by the formation of products which are inimical to human life. No forms of such matter are so liable to engender unwholesome effluvia, as the bodies of persons who have died from disease. Innumerable cases are on record of the most lamentable results having ensued to the living from the contact or presence of corpses, especially during the prevalence of epidemic affections. Condy's Fluid, containing a large available volume of active oxygen, ready to reduce to a state of inertness all the emanations from the decomposition of organized substances, is eminently qualified for disinfecting dead bodies, and neutralizing cadaveric virus, and, as such, recommends itself especially to undertakers and those who have the conducting of interments, post-mortem examinations or anatomical dissections.

When, as in the case of dead bodies for interment, liquid substances are objectionable, Condy's Health Powder, which contains in a solid form the disinfecting principle of the Patent Fluid, may be advantageously employed. The following directions point out the method of using this preparation:— Deposit at the bottom of the coffin a layer of powder, and sprinkle some of it over various parts of the corpse. The escape of offensive effluvia will thereby be completely prevented and all danger of infection removed.

CHARING CROSS HOSPITAL,  
March 5, 1857.

This is to certify that "Condy's Solution" has been employed for the purpose of practical anatomy at the Charing Cross Hospital Medical College during the sessions of 1856-7, and has answered extremely well.

It possesses an advantage over the chlorides in not bleaching muscular structures.

F. W. GOLDSBRO', M.D.,  
Demonstrator of Anatomy at the Charing Cross,  
Hospital Medical College.

March 7, 1857.

I fully concur in the opinion given by Dr. Goldsbro', of the value of "Condy's Disinfecting Fluid."

EDWIN CANTON, F.R.C.S.,  
Lecturer on Surgical Anatomy at the Charing Cross  
Hospital Medical College.

27, HOPE STREET, LIVERPOOL,  
December 1, 1857.

I have much pleasure in bearing my testimony to the value of "Condy's Patent Fluid" as a deodorizer and disinfectant, having latterly tested its properties in a variety of ways. In the dissecting-room I have found it valuable in destroying the effluvia from the decomposing bodies; and in arresting the putrefaction of substances immersed in it. In the sick room it has a most beneficial effect; and as it possesses no odour of its own, is not objectionable. It rapidly destroys the offensive smells, whether arising from the bodies or evacuations of the sick. I believe it to be the best preparation of its kind we are possessed of.

A. T. H. WATERS,  
Lecturer on Anatomy and Physiology, in the Liverpool  
Royal Infirmary School of Medicine.

ROYAL COLLEGE OF SURGEONS, LONDON,  
SIR,

October 7, 1861.

I have to acknowledge the receipt of your note of the 2nd instant, and think that the best testimonial I can send you is an order for another gallon of your Disinfecting Fluid, which is the only article of the kind in use at this College, and which answers our purpose very well.

I remain, Sir, your obedient servant,

Mr. H. B. Condy.

T. M. STONE.

PARK STREET, GROSVENOR ROAD,  
DEAR SIR,

August 21, 1858.

I have tried the effect of the Hypermanganate Solution, which you were so kind as to send me, upon different decomposing substances with very satisfactory results. I was much struck, however, by the rapidity with which it destroyed all trace of the very foetid odour of a post-mortem examination in which I had been engaged, without leaving any other smell, or any stain upon the hands.

I am, yours truly,

JAS. MORRIS, M.D., F.R.A.S.

SLOANE SQUARE, CHELSEA,  
March 20, 1858.

A resident in my house having died very suddenly and unexpectedly in full habit of body, decomposition commenced and continued so rapidly, that before the inquest, to inquire into the cause of death, could be held, or the body interred, the effluvium arising was so intense and offensive that it was impossible to remain in the house. I used chloride of lime, chloride of zinc, and other remedies recommended for removing smells, but without any effect at all. I then tried "Condy's Patent Fluid," using half-a-pint, diluted with water, in sprinkling about the room, staircase, &c., which immediately removed all trace of the nuisance.

WM. T. C. WATKINS.

SIR,

LIVERPOOL, April 12, 1861.

Having heard of the good effects of your Health Powder, I introduced it into the stuffing of two coffins lately, and the result gave great satisfaction to the friends and relatives, all disagreeable odour being prevented.

Mr. H. B. Condy.

Yours obediently,

WM. M. AYRES.

“Twelve gallons of Condy’s Fluid have been ordered to be in readiness to be carried into the colliery to counteract the offensive odours that prevail in that horrible pit. The details of the condition of many of the bodies are too sickening for repetition.”—The Hartley Pit Catastrophe; *Daily News*, January 25, 1862.

## XXII.

## HOSPITAL PRACTICE.

By reason of the numerous purposes, in connexion with the management of the sick, to which it can advantageously be put, Condy's Fluid is of peculiar utility in hospital practice. The extraordinary power possessed by the alkaline permanganates of destroying impure and morbid matter, coupled with the mildness and wholesome character of their effects, render this fluid as well adapted for the disinfection of the living tissues as for that of extraneous offensive substances in general, and as suitable for neutralizing virulent matters present in the stomach and bowels, as for rendering innoxious the poisonous intestinal discharges which characterize many contagious diseases, and on contact with which their propagation mainly depends. As a vehicle of oxygen it may be employed, with equal advantage, largely diluted, to secure the purity of water used in "water-dressings" and the bath, or in the concentrated form to destroy the virus of foul ulcers and to modify the character of putrid sores. Practical experience of the remarkable influence of the nascent oxygen of the permanganates, in determining the cessation of gangrene, has been fully borne out and explained by the recent observations of MM. Réveil and Laugier, which go a very long way to prove that that disease is occasioned by the diminution or total elimination of the oxygen necessary to maintain the vitality of the affected part. Even internal disinfection and the neutralizing of morbid and acrid secretions in the intestines, may be effected without danger or inconvenience by its means. The application of Condy's Fluid to such special purposes is moreover attended by a most important advantage, which cannot be too much insisted on, namely, that its employment, in those circumstances, is productive of general purifying effects, which cannot but tend to the improvement of all the other sanitary conditions.

"With regard to the question of general management [in surgical injuries] the single fact of cleanliness, if taken in its largest sense, will shut out nearly all the mischiefs that come from without; but that cleanliness must be cleanliness of person, of air, of water, and of everything that may come near the wound."—Address in Surgery, by Mr. J. Paget, at annual meeting of British Medical Association; *Medical Times and Gazette*, August 16, 1862.

LIVERPOOL, October 30, 1857.

Having ordered "Condy's Patent Fluid" to be applied to foul ulcers and gangrenous wounds, the results have proved most satisfactory. I have also much pleasure in bearing testimony to its valuable properties, as a general disinfectant. I very much prefer it to any other I have ever used, and consider it extremely serviceable, in hospital practice.

W. B. WALL, M.R.C.S.,  
House Surgeon, Northern Hospital.

TEMPLE ROW, BIRMINGHAM,  
February 24, 1858.

I hereby certify that I have made use of "Condy's Patent Fluid" as an application to foul ulcers, with a view to destroy unpleasant smells and generally to act as a disinfectant. I have found its action of the most satisfactory kind. Further, I have used the fluid to sprinkle over the beds of patients, over the floors, and in the receptacles for dressings, &c., removed from wounds; in all respects its action has been sure and speedy, and I beg to recommend it to the notice of all those who may be engaged in hospital practice. In addition, I have extensively used this fluid in the dissecting room; its effect has been to sweeten a decomposing part, and to act as a preservative to the tissues fairly exposed to its influence by the use of saturated bandages. It is my opinion that it is a safe material to have about sick rooms, and I beg, therefore, to advocate its use as a disinfecting (as well as a deodorizing) agent.

OLIVER PEMBERTON,  
Surgeon to the General Hospital, and Teacher of  
Practical Anatomy in Queen's College, Birmingham.

SIR,

HAMMERSMITH, July 28, 1860.

After numerous experiments on the capabilities of various disinfectants, I consider yours stands pre-eminent. Its inodorous character, rapidity of action, and facility of application, as a general disinfecting agent, should command for it an extensive use; whilst as a cleansing application, in a diluted state, to cancerous and other offensive ulcers, I have found it productive of the most beneficial results.

I am, Sir, yours faithfully,  
FREDK. J. BURGE,

Mr. Condy,  
Chemical Works, Battersea.

Medical Officer of Health,  
Fulham District.

"CONDY'S FLUID IN ULCERATED SURFACES.—This fluid, which consists of permanganate of potash in solution, is being extensively tried at the Middlesex Hospital by Mr. Henry and others, in cases of burns, large ulcers, and suppurating surfaces, arising from any causes, especially where secretions are not only copious, but at the

same time offensive. A case of very severe burn about the body and thighs of a female, admitted on the 2nd of October, is doing well with 'Condy's Fluid.' She had Carron oil applied the first day, and 'Condy's Fluid' was commenced on the fourth day, with immediate relief to the pain. This fluid prevents any foetor arising from the suppuration. It was employed in two or three instances of cancer of the breast, from which there had been a very foul discharge; also in obstinate ulcers of the leg, and apparently with benefit."—Clinical Records (Editorial), *Lancet*, 1st January, 1859.

LIVERPOOL, November 16, 1857.

"Condy's Disinfecting Fluid" has been tried in our hospital with very great success. As a disinfectant it is certainly the best I have ever used, or seen used, its action being almost immediate. In poultices it answers very well, destroying all smell, and cleansing the wound more quickly than any other application. I shall be glad of an opportunity of more extended trials, as I feel confident it will be found of great service in the hospital.

JOSEPH JOHN POPE, M.R.C.S.,  
Senior House Surgeon, Southern Hospital.

"THE DEODORIZATION OF FOUL ULCERS.—Mr. Weeden Cooke referred to the sulphate of lime and coal tar which has lately been much used and extolled in the French and Italian hospitals, for the purpose of cleansing foul and sloughing ulcers. He had himself employed it, and thought that its virtues and advantages were much overrated; that it sometimes produced more irritation in the part than was desirable, and that it was less convenient in application than other equally effective cleansing remedies, whilst it was far inferior in value in sloughing ulcers to the manganate and permanganate of potash [Condy's Fluid]."—Mr. Weeden Cooke, at Medical Society of London, October 24, 1859.

"CONDY'S DISINFECTING FLUID (PURPLE)—which is, I believe, a concentrated solution of the permanganate of potash, was used in the proportion of two drachms to a pint of water as a vaginal injection three times a day. The proportions were rapidly increased up to one fluid ounce to a pint of water. The result was in every way satisfactory. The gentleman previously alluded to, digitally examined the patient with me a few days after it had been used, and the smell was very much lessened, as also the amount of the discharge. One great advantage in the use of the permanganate is, that it has no smell of its own, and that, being soluble, it may be used either in the form of a medicated pessary, or in that of an injection. From my experience of its use, I can confidently recommend it in the proportion of one fluid ounce to a pint of water, as a deodorant in cancer of the uterus; a cupful to be used as an injection thrice daily, and the strength to be increased, if found necessary."—Dr. T. Skinner on Carcinoma Uteri, in *British Medical Journal*, December 3, 1859.

"As a vaginal injection she used a solution of Condy's Disinfecting Fluid, in the proportion of two ounces to the pint of water. Under the use of this injection the discharge became much less offensive and smaller in quantity."—Case of Malignant Disease of the Uterus, by Dr. Alexander Keiller, *Edinburgh Medical Journal*, March, 1862, p. 890.

"ON SOME OF THE USES OF PERMANGANATE OF POTASH.—In the case of a barrister, I was consulted respecting a most unhealthy eroding ulcer on the thigh. The permanganate was applied as a lotion, and was most efficacious in removing the slough, cleansing the sore, and inducing healthy action.

An elderly female, long afflicted with caries of the libia, which, from the offensive odour generated by this condition of bone, prevented her performing the duties of her position in life, with any comfort to those around her, has enjoyed perfect freedom from this annoyance ever since she has had recourse to the permanganate as an application to the leg.

In the case of a naval officer afflicted with cancer of the breast, the application was most serviceable. From a gaping sore in most offensive condition, it occasioned the wound to assume a disposition to granulate. The odour of the apartment previous to the employment of the permanganate, was so offensive as seriously to compromise the comfort of the family. This inconvenience is entirely removed.

This lotion supersedes all the charcoal, yeast, and carrot poultices. As a deodorant, as a stimulant, as an escharotic, it is a most useful application, combining, as it does, all these three qualities: in such cases, for instance, as old chronic ulcers, warty growths, syphilitic sores, a caustic in the primary stage, or in gonorrhœa, as a stimulant injection. Sufficient to cover the surface of a plate placed under the bed, or any where most convenient in the sick chamber, all odour disappears. I have employed it in my stables and in other places engendering odours. All these odours are destroyed by the dish containing the solution.

The Permanganate of Potash may be purchased, wholesale, at the Battersea Chemical Works, of Mr. Condy, the patentee."—Dr. G. F. Girdwood, abridged, in *Lancet*, 12th September, 1857.

7, CHESTER STREET, July 18, 1857.

I have tested Mr. Condy's Disinfectant Fluid in every possible way, upon all manner of putridities, both solid and fluid, and I have no hesitation in saying that it is perfect as a true chemical disinfectant; I have used the same fluid as an internal remedy in cases of putrid and low fever, with the most beneficial effect.

W. VESALIUS PETTIGREW, M.D.

Hon. F.R.C.S. of England, formerly Lecturer upon Anatomy and Physiology at St. George's School of Medicine.

SALFORD AND PENDLETON ROYAL HOSPITAL,  
May 10, 1860.

The Medical Board of the above Institution having received various samples of Mr. Condy's preparations of Permanganate of Potash, have pleasure in testifying as to the favourable results. The solution has been useful, not only as a disinfectant in preventing putrefaction, but internally as a tonic antiseptic. The Disinfecting Fluid has been fairly put to the test in our wards, and had the desired effect.

JOHN BOUTFLOWER, M.R.C.S., Surgeon.  
SAMUEL BOOTH, Jun., M.R.C.S., L.S.A.,  
House Surgeon.

"The patient found iced things most pleasant to his throat; and for the past two days had very frequently gargled his mouth with iced water, iced alum water, and iced diluted Condy's Fluid. . . .

He constantly cried out for more air. He found relief by frequently rinsing and gargling his mouth with a dilute solution of Condy's Fluid. . . .

This fluid, diluted in the proportion of about two drachms to half a pint of water, as a strong oxygenator, may be advantageously used as a gargle."—From notes of a case of Diphtheria, in a medical gentleman, treated and reported by Dr. Hillier, Assistant-Physician to the Hospital for Sick Children—Laryngotomy—Recovery; *Medical Times and Gazette*, February 23, 1861.

"The object of our treatment should be to relieve the local symptoms and remove the virulent poison from the system. These ends may be attained most satisfactorily by using a lotion composed of Condy's Disinfectant Fluid in proportion of one part to eight of water, which is to be applied to the throat by means of a camel-hair pencil several times a-day. This lotion seldom fails to remove the exudation within twenty-four hours, and to give a healthy appearance to the throat. I have employed it with invariable success, both in diphtheria and scarlatina. It also completely destroys all fetid odour, and diminishes and improves the state of the saliva. To use the expression of one of our most eminent physicians, who was induced to use it in diphtheria, 'it acts like a charm.'

Since the above was written I have had further opportunities of observing the effects of the alkaline permanganates, as embodied in Condy's preparations, and consider them so important as to make it very desirable that the profession should be more generally acquainted with their valuable properties. Condy's Fluid is not only eminently efficacious, as a gargle or application to the throat, but it forms an excellent lotion for all kinds of foul ulcers, and particularly for open cancers, the offensive odour of which it completely removes. The effects of the alkaline permanganates are greatly increased by using them warm; and when a very energetic action is required, a few drops of sulphuric acid may be added immediately before applying them. The inconvenience experienced in prescribing Condy's Fluid in medical language, has been obviated by the designations of the

following formulæ, which have been devised by Mr. Condy for prescription by medical men: they express preparations consisting of solutions of uniform strength, and absolutely pure salts of permanganic acid. In using them, particular care must be paid to the purity of the water with which they are combined, as few compounds are so liable to be decomposed by organic impurities, which circumstance also prevents the admixture of almost every other ingredient.

#### FORMULÆ.

Liquor Potass v. Calc. v. Magnes. Permanganatis (Condy), gr. ij ad  $\frac{3}{4}$ i.

Internally.—Dose from ten drops to a drachm, in half a pint, or less, of pure water.

Externally.—As a lotion, gargle, &c., from one to four drachms, in half a pint of water.”—Practical Observations on Diphtheria, by Charles Bell, M.D., F.R.C.P.E.—*London Medical Review*, March, 1861.

SIR,

BIRMINGHAM, *August 4, 1860.*

In reply to your note, I have to acknowledge your politeness in causing a specimen of the pure Permanganate of Potash to be left at my house. I have used the liquid for my own family purposes, on occasions when its virtues were required; and have found a perfect fulfilment of the promised results. I have also requested my chemists to obtain it for medicinal purposes, which they have done, and on prescribing its use in putrid dyspepsia and gangrene of the lungs, and its external application in cancerous ulcers and the like, the effects have proved most pleasing and satisfactory.

I remain, Sir, your obedient servant,

H. B. Condy, Esq.

DAVID NELSON, M.D.

SIR,

16, EATON TERRACE, *May 13, 1862.*

A correspondent in last week's *Medical Times and Gazette* asks, can any one suggest a remedy for the distressing thirst of diabetic patients? I have found the solution of permanganate of potash in drachm doses every six hours to give relief in every case in which I have tried it. In some cases the relief was complete, in others only partial.

This remedy was suggested to me by Mr. Sampson, who considers that it had a curative effect in the disease. I cannot say that it had any other effect, in my experience, than the very important one of relieving the urgent thirst.

Yours truly,

To the Editor of the

*Medical Times and Gazette.*

ROBERT SYNNOT.

“That chlorine and iodine had in their effects an analogy to salts of mercury was a fact long recognized; but that oxygen in the active

state exerted the same physiological action was a fact as remarkable as interesting. It opened an entirely new field of enquiry, and suggested the possibility that the salts of mercury did not act by virtue of the mercury, as mercury, at all, but by the agency of the oxygen, echlorine, or iodine which they conveyed into the organization. It also suggested the propriety of ascertaining whether echlorine or active oxygen might not replace mercury in cases where it was supposed to be specific. If this suggestion were carried out, and an affirmative supplied, the method of cure in the disorders alluded to would be rendered both more simple and more rational."—Dr. B. W. Richardson, "On the Therapeutic Properties of Peroxide of Hydrogen," at Medical Society of London; *Medical Times and Gazette*, 29th March, 1862.

"The author also recorded the effects of ozone in another form [permanganate of potash]. He had made use of the ozonised water (as prepared by Condy) and found its influence in retarding the pulse considerable."—Dr. E. S. Thompson, "On the Influence of Ozonised Substances on the Pulse;" *Medical Times and Gazette*, March 2, 1861.

#### ACADEMIE IMPERIALE DE MEDICINE.

*Séance du 17 Septembre, 1861.*

PRÉSIDENCE DE M. ROBINET.

VII. M. Boudet offre à l'Académie un Mémoire imprimé de M. Henry B. Condy sur les propriétés désinfectantes et thérapeutiques des permanganates alcalins.

Il expose à cette occasion les observations suivantes:—Un chimiste Anglais, M. Henry B. Condy, m'a prié de présenter à l'Académie quelques exemplaires d'un opuscule dont il est l'auteur et qui me paraît très digne d'attention. M. Condy m'a été adressé par mon savant ami M. Pelouze, qui a été frappé lui-même de l'intérêt que ce travail devait offrir pour l'Académie de Médecine. Voici de quoi il s'agit:

On sait depuis les recherches de Schönbein et Houzeau que l'oxygène ozoné, l'oxygène actif, l'oxygène naissant, constitue une seule et même substance qui jouit de propriétés chimiques très énergiques; on sait aussi que l'oxygène ozoné existe naturellement dans l'atmosphère, qu'il y joue nécessairement un rôle considérable au point de vue de la respiration des animaux, que les émanations organiques le détruisent et qu'on peut à peine constater sa présence dans l'air des grandes villes, tandis qu'il se trouve en proportion notable dans l'air des campagnes.

Cet oxygène connu et étudié depuis longtemps déjà comme agent chimique, n'a encore reçu que je sache, aucune application thérapeutique de quelque importance; c'est à ce dernier point de vue que M. Condy l'a considéré, et il signale les permanganates alcalins et notamment le permanganate de potasse, comme une source d'oxygène naissant qui offre les conditions les plus favorables pour son emploi.

L'action oxydante de ce composé est telle qu'il brûle rapidement les matières organiques partout où il les rencontre et qu'il peut ainsi servir à la purification de l'air et de l'eau, à indiquer la présence, et même à doser les proportions des matières organiques qui s'y trouvent. N'ayant aucune odeur, étant inoffensif lorsqu'il est en dissolution étendue, ne donnant après son action, que des produits inoffensifs eux-mêmes, il peut être appliqué à l'économie aussi bien à l'intérieur qu'à l'extérieur sans inconvenienc.

M. Condy prévoit et signale une foule de circonstances dans lesquelles ce sel lui semble appelé à rendre les plus grands services comme moyen de désinfection ou d'assainissement et surtout comme agent thérapeutique, entre les mains des médecins des chirurgiens et des vétérinaires. Jouissant à un très haut degré de la propriété de modifier et même de détruire les matières organiques et spécialement celles qui sont en voie de décomposition ou de fermentation, quelles ressources ne doit-il pas offrir pour le traitement des plaies et des ulcères, pour les déteiger, les assainir, les modifier, pour prévenir ou arrêter les effets de la contagion, pour combattre les affections diphthériques, pour modifier ou détruire les productions anormales, les sécrétions nuisibles et même certaines substances veneneuses dans les organes digestifs ?

L'opuscule de M. Condy fait entrevoir une multitude de cas dans lesquels le permanganate de potasse ou les autres permanganates alcalins peuvent devenir un agent thérapeutique très précieux, et il appelle sur ce remarquable composé l'attention la plus sérieuse de tous les hommes qui sont voués à l'art de guérir. Le but de M. Condy, en signalant dans son mémoire les nombreuses applications dont cet agent est susceptible, est de répandre une idée utile et de provoquer de la part des médecins, des chirurgiens et des vétérinaires des expériences qui peuvent conduire à des résultats d'une très-haute importance.

C'est parce que j'ai été frappé de ces considérations que j'ai cru devoir entrer devant l'Académie dans quelques développements en lui présentant le travail de M. Condy.

*Bulletin de l'Académie Impériale de Médecine, t. xxvi. p. 1267.*

## XXIII.

## IMPORTANT SANITARY AGENT FOR ARMIES.

The high rates of mortality which have usually prevailed in armies, especially when on active service, have been traced, by those most conversant with the subject, to causes of a septic nature, such as those arising from foul air, tainted water and provisions, and conditions of cloacine and personal impurity, aggravated by the lowering effects of exposure and other hardships, and by the extension of the same causes to the hospitals and dépôts in which the sick are received. All of these sources of sickness are directly within the control of the purifying action of ozonic oxygen as contained in Condy's Fluid, which, holding that substance in a concentrated, portable, and economical form, furnishes the most efficient means ever devised of remedying the unwholesome influences commonly attendant on the active prosecution of military operations, over and above the many special purposes it serves in veterinary, hospital, dietetic, and personal hygiene, and, consequently of reducing the mortality hitherto experienced by armies in the field. This Fluid, which was supplied to the British expeditionary force recently employed in China, contributed, without doubt, to a considerable extent, towards the remarkable sanitary efficiency of the army serving in the late Chinese war.

SIR,

BARNSBURY PARK, *August 29, 1857.*

The opinion I have formed of "Condy's Patent Disinfecting Fluid" is highly favourable. I have used it at the Model Prison, and elsewhere as a disinfectant and deodorizer, especially as applied to water-closets and drains, in which it has answered fully its intended purpose. I have also used it in the dead-house with much advantage; and under my direction it has been successfully employed at the Gas Works of the Model Prison for destroying the offensive effluvia given off from foul water, &c., in the wells of the gas-holders. I consider "Condy's Fluid" to be a valuable sanitary agent in the hands of those who have the medical charge of large bodies of men, and to be besides well adapted for the use of families in private houses.

I am, Sir, yours faithfully,

CHAS. LAWRENCE BRADLEY, F.R.C.S.,  
Surgeon to the Pentonville Model Prison, Member of the  
Epidemiological Society, &c. &c.

No. 456 of 1859.

*From the Director-General, Medical Department, to the Secretary to  
Government Military Department.*

SIR,

Dated *February 21, 1859.*

Adverting to your letter, No. 712, of the 26th January, 1858, I beg to report that "Condy's Disinfecting Fluid" sent out by the

Honourable Court of Directors for trial and report, has been distributed with the greatest advantage. I have received from several medical officers who have made use of this Patent Fluid the highest testimonials in its favour, as the best of its kind ever introduced. The Surgeons of the European General, Jamsetjee Jeejeebhoy, and Artillery Hospitals at the Presidency, state that "Condy's Fluid" has been used with perfect success in destroying the offensive odour of substances, and is an excellent application to foul sores and fetid ulcers. The same favourable reports have been received from out stations, and nearly all concur in considering it superior to the chloride of zinc, as a deodorizing and disinfecting agent.

I beg to recommend that the Home Government be solicited to send out a further supply of "Condy's Patent Fluid," and that I may be permitted to direct the Medical Storkeeper to indent upon England yearly for a sufficient quantity.

I have, &c.

(Signed) B. P. ROOKE,  
Director-General to Medical Department.

Bombay, February 21, 1859.

(True copy.) P. M. MELVILLE, Colonel,  
Secretary to Government.

[No. 551.] *From DR. ANDERSON, M.D., Superintending Surgeon, Presidency Circle, to DR. N. CHEVERS, M.D., Secretary, Director-General, Medical Department. (No. 404, dated the 2nd December, 1859.)*

I have the honour to inclose, for the information of the Director-General, Letter No. 191 of the 29th November, 1859, from Dr. Scriven, First Assistant-Surgeon of the General Hospital, reporting favourably on "Condy's Patent Fluid," as a disinfectant and deodorant.

*From DR. J. B. SCRIVEN, First Assistant-Surgeon, General Hospital, Fort William, Calcutta, to DR. J. ANDERSON, Superintending Surgeon.*

I have the honour to report upon two jars of "Condy's Patent Fluid," sent for trial from the Government Dispensary, that it has been daily used in cleansing the General Hospital necessaries with decidedly beneficial effect. It has been employed with particular advantage for washing sloughing ulcers, and as a gargle in cases of scurvy.

29th November, 1859.

(Signed) J. B. SCRIVEN, M.D.

ARMY MEDICAL DEPARTMENT,  
June 13, 1862.

SIR,

With reference to previous correspondence, I have the honour to inform you that reports have been received from China on your "Disinfecting Fluid," and to acquaint you that they are generally favourable.

I have the honour to be, Sir,

Your most obedient servant,

J. B. GIBSON,  
Director-General.

Mr. H. B. Condy.

## XXIV.

## PECULIARLY USEFUL ON BOARD SHIP.

The conditions of life on board ship are such, as to render in an especial degree necessary the habitual employment of every means calculated to promote purity. The gradual decay, fostered by exposure to wet and ever on the point of advancing to putridity, which is continually going on in the timber that so largely enters into the structure of ships of all kinds; the constant presence in the bilges of a certain quantity of stagnant water impregnated with the more soluble products of decaying wood and other effete and decomposing organic matters; the limited nature and too often the bad state of the water supplies, as well as incidentally of the other provisions; the numerous occasions which arise for limiting ventilation on the lower decks during bad weather; the liability of the men to contract contagious febrile affections at unhealthy stations, and venereal disease at most ports, as well as their frequent exposure to the consequences of poisoned wounds and the irritating bites of insects; together with the necessary proximity of the sick to the well, constitute conditions which cannot but cause the crews of ships at sea to be extremely exposed to pythogenic and other morbific influences. This is particularly the case on board vessels in which large bodies of men are closely congregated together during lengthened periods, such as ships of war, which may justly be looked upon as combinations of floating barracks and hospitals, existing under peculiarly unfavourable circumstances of construction, and cut off for a time from external resources. Those fatal outbreaks of virulent fever, cholera, &c., which have, even quite recently, occurred in the Royal Navy, as, for instance, on board the *Eurotas* and *Express* in 1856, the *Virago* in 1857, the *Leopard*, *Princess Royal*, and *Valorous* in 1858, and subsequently in the *Hydra*, *Firebrand*, *Jason*, *Barracouta*, *Spiteful*, and *Racer*, are more than sufficient to prove that such is the case; and at the same time to indicate, the necessity for the adoption of effectual measures for promoting purity and overcoming infection and the results of contagion, especially in vessels where diseases characterized by discharges from the stomach and bowels, prevail.

Impressed with a conviction of the benefits which would be found to accrue from the employment of Condy's Fluid in the emigrant service, in the year 1858, I brought the subject under

the notice of the Government Emigration Board, who ordered it to be tried by their medical officers, and, after a prolonged series of experiments, adopted it for all their chartered vessels. Further experience having proved to them the very great utility of this preparation, they introduced it on the list of sanitary articles sanctioned for use on board private passenger ships. But the control of the Emigration Commissioners over shipping ending here, they could give no further aid in extending to merchant vessels not carrying passengers nor to the Royal Navy the use of Condy's Fluid. It cannot, however, be doubted that the benefits derived by emigrant and passenger ships from this preparation, would, even in a greater measure, be experienced on board vessels of war.

No other known substance is calculated to be of such general sanitary utility on board ship as Condy's Fluid, on account of the numerous important purposes to which its inoffensive composition enables it to be put, over and above those of ordinary disinfection, as, for instance, renovating and freshening the air of close cabins, purifying offensive water, recovering tainted provisions, maintaining personal purity, as a detergent agent in numerous external complaints, and as an antidote to the irritating bites of mosquitos and other insects in warm climates, which, by being imprudently scratched, degenerate so frequently into intractable ulcers, and also to organic poisons taken into the stomach and the pernicious consequences of unwholesome articles of food and drink. This preparation is, moreover, free from the objections found against chlorine and the compounds of hypochlorous acid, that they cannot be safely employed in inhabited places without removing the occupants during their use, and that their effects are feeble except in strong light, as well as from that which lies against them in common with the metallic chlorides, that they corrode the pumps and metal fastenings of ships.

The objection has been raised to the use of this Fluid in the Royal Navy, that it produces stains. In the strong state before being diluted, it undoubtedly does stain, as do concentrated solutions of other chemical disinfectants. Not only do all such substances cause discoloration when applied undiluted to wood, linen, &c., but, if possessed of any value at all, they corrode and destroy them. Disinfecting fluids, however, ought never to be employed in that form. After being made down for use by the addition of the proper quantity of water, Condy's Fluid will not stain the most delicate fabrics. Where stains happen accidentally or otherwise from the concentrated Fluid, they can be readily removed by substances capable of dissolving the binoxide of manganese of which they

consist, such as tartaric or oxalic acid, or common "salt of sorrel." Muriatic acid to a certain extent answers the purpose, but not so well.

For most ordinary uses sea water can be employed for diluting Condy's Fluid quite as well as fresh water, which is necessarily more or less scarce on board ship.

"What cannot be too much insisted on is, that all the diseases which have been the scourge of the navy as well as of our army, are in a great measure of a preventable kind,"—Notice of Dr. Milroy's Health of the Royal Navy; *Medico-Chirurgical Review*, No. LIX, p. 110 (1862).

"It cannot be doubted that ships are more or less fitted to convey the disease [cholera] or its cause from port to port, in proportion to their want of cleanliness, defective ventilation and overcrowded state."—*On Tropical Climates*, by Sir J. R. Martin, M.D., p. 317.

"To run infected ships out of the tropics, and to maintain as strict a separation as possible between the sick and the healthy, are not the only precepts of first-rate importance suggested by the contagious nature of this fearful malady [yellow fever] and the known thermometrical conditions required for its propagation. To destroy the contagious properties of the black vomit, and of the other secretions, immediately on their issue from the body, is, to say the least, as essential in many cases, if we wish to limit the sphere of the infection. Whenever a contagious disorder is attended by discharges that are characteristic of it, these discharges are always the chief vehicle of the morbid poison. They originate in fact in, and are the outward marks of, the very act of elimination. It is from this intimate connection with the specific poison in each particular case that such discharges derive their special character. I need scarcely add, that yellow fever offers no exception to this law. It would occupy too much space to give in detail the decisive evidence by which it may be shown that the black vomit and the secretions of the same kind, which issue from the bowels, have a very large, if not the principal, part in the propagation of this pestilence. It may be sufficient to state here, that this conclusion can be deduced with the utmost certainty from already existing data. By their nature as well as their amount, these discharges are eminently fitted to spread and carry out, over a wide sphere, the work of dissemination. In malignant attacks, the quantity of fluid thrown off by the stomach, in the shape of the characteristic black vomit, is often absolutely enormous. In many subjects a similar fluid is discharged in floods by the bowels also; at sea it saturates not only the bedding and the other furniture, but the timbers of the ship also, which it infects with a long abiding taint."—Dr. W. Budd, on the Contagion of Yellow Fever; *Lancet*, April 6, 1861.

"There were 218 cases of ulcer, of which six were invalided. A large proportion of these cases originated from slight wounds or abrasions, and from imprudently scratching and irritating mosquito bites."—*Report on the Health of the Royal Navy for 1858*, by Dr. A. Bryson, West Coast of Africa Station, p. 91.

"*Ulcer*.—Ulcerative disease, compared with the Home Station, was of frequent occurrence, though it caused no loss to the service by death or invaliding. A large proportion of the sores were the result of mosquito bites and common boils."—*Report on the Health of the Royal Navy for 1858*, by Dr. A. Bryson, Brazil Station, p. 62.

"A few scorbutic cases made their appearance amongst the crew of the "Leopard" after they had been for a long time victualled exclusively on sea rations, but none were so severe as to require suspension from duty. The symptoms manifested were sponginess of the gums, and the degeneration of slight wounds and mosquito bites into indolent ulcers."—*Report on the Health of the Royal Navy for 1858*, West India Station, p. 49.

"Chlorine is a substance which destroys ammonia and organic bodies with much facility; but it exerts such an injurious influence upon the lungs, that it may be classed amongst the most poisonous bodies known, and should never be employed in places in which men breathe."—*Liebig's Chemistry of Agriculture*, by Playfair, 4th edit. (1847), p. 404.

"The disinfectant action of chlorine is fully displayed only in the presence of light, so that its influence is comparatively small in dark or ill-lighted apartments, such as underground cellars, the lower cabins or the holds of ships, which are the very places where disinfectants are most required."—On some of the most important Chemical Disinfectants, by Professor George Wilson; *Pharmaceutical Journal*, vol. xii, p. 278.

"Chloride of lime not merely affects the respiration but discolors and rusts everything within its reach."—*Cooley's Cyclopaedia of Practical Receipts—Chlorides*; 3rd edition, p. 241 (1856).

"Sir William Burnett's Fluid is a solution of chloride of zinc. It is said to have no injurious action on articles of metal, but the accuracy of this observation is doubtful. As a deodorizer its action depends principally on its property of decomposing hydro-sulphuret of ammonia. Its power of decomposing sulphuretted hydrogen is very limited, since an acid solution of zinc is not decomposed by sulphuretted hydrogen, and the deodorizing effect cannot take place without hydrochloric acid being set free.

Another solution similar to that of Burnett is now sold under the absurd name of Crew's Disinfecting Liquid, when in fact, like that of Sir William Burnett, it merely [partially] deodorizes."—*Pereira's Materia Medica*, 4th edition, by Drs. Taylor and Rees, vol. i, p. 775 (1854).

SOUTHERN HOSPITAL, PARLIAMENT STREET,  
LIVERPOOL, *February 23, 1858.*

Having had further opportunities of trying the effects of "Condy's Patent Fluid," both as a general disinfectant, and also as applied to sloughing sores, I have no hesitation in recommending it as a most admirable article for use on board ship, and think that its more general use in the merchant service would tend greatly to the preservation of health of the seamen throughout long voyages.

JOSEPH JOHN POPE, M.R.C.S., &c.,  
Senior House Surgeon.

S. S. CANADA, *February 26, 1858.*

This is to certify, that I have employed "Condy's Patent Fluid," and found it the best disinfectant I ever used for purifying water-closets, ice-houses, and state-rooms on board-ship.

H. CHRISTIE,  
Chief Steward.

NORTHERN HOSPITAL, LIVERPOOL,  
*February 22, 1858*

SIR,

Having been requested to state my opinion of your Fluid, as applicable or desirable for use on board ships, I have much pleasure in saying, that the results obtained at this Institution have been so satisfactory, both for general disinfecting purposes and as a local application to wounds and ulcers in a state of gangrene, that I have no hesitation in offering my opinion, that it is peculiarly adapted for use on board ships carrying passengers and going long voyages. As a disinfectant, I consider it superior to any I have ever used.

W. B. WALL,  
House Surgeon.

HAVRE, *October 28, 1861.*

I hereby certify, that having used "Condy's Disinfecting Fluid" during several months on board the steamer "Balbec," trading between Liverpool and Havre, for the closets and bilge water, I have found it very superior to every other disinfectant which I have employed or seen used during a career of forty years in the Royal Navy and Merchant Service.

EDWARD LE FEUVRE,  
Steward.

ST. KILDA, NEAR MELBOURNE,  
*May 15, 1858.*

SIR,

I feel great pleasure in informing you, that your Disinfecting Fluid proved very valuable to me during my voyage to Australia. Messrs. Green's ships are fitted in each cabin with separate accommodation, and I am quite sure that had it not been for the constant use of this liquid, the sea-sickness would have been greatly augmented. In the burning heat of the tropics, it rendered the cabin cool and wholesome, and much reduced the unpleasant smell of the ship stores, which were close underneath our cabin windows. I lost

the contents of two bottles from leakage, and having given away some to the other passengers, I was unable to present any to the captain, which I much regretted, as all the passengers who tried it thought very highly of it. My voyage was made in the "Swiftsure." Captain Pryce.

H. B. Condy, Esq.

I am, Sir, yours obediently,

H. A. HARDWICK.

LIVERPOOL, June 17, 1858.

I can testify to the complete destruction, by Condy's Fluid, of the smell of guano in the "Salem," and I am the owner of that ship.

J. G. STUART.

SIR,

SYDNEY, August 1, 1860.

In answer to your favour of March last, respecting a supply of your Disinfecting Fluid sent on board the ship "Chance," at Southampton, bound for Sydney, with Government emigrants, I beg to inform you, that having given it a fair trial during the voyage, I consider it to be the *best disinfecting agent at present in use*, especially for pouring down the air-holes and pump-wells, as it not only *destroys the noxious effluvia but also appears to supply a portion of the grand desideratum, oxygen, so much needed in crowded between decks.*

I have also found it beneficial as a lotion (in a diluted form) in old and indolent ulcers, especially when occurring in patients of a scorbutic diathesis.

I have recommended it in my report to the Commissioners for Emigration, and hope to see it introduced in all emigrant ships.

I have the honour to be, Sir,

Your most obedient servant,

J. C. SANGER, M.D.,

Late Surgeon Superintendent of the ship "Chance."

Mr. Condy.

SHIP "ROYAL ALBERT," TABLE BAY,

March 15, 1861.

SIR,

I have given your Disinfecting Fluid a fair trial on board this ship, and have made a report on it to Her Majesty's Emigration Commissioners, in the following terms:—

As a deodorizer and general purifier, I consider it invaluable, it having proved perfectly effectual in every case in which I have used it; and I imagine that there are few places where a fair trial can be more readily given to an agent of this kind than on the 'tween decks of an emigrant ship.

Not the least important of the purposes for which I have found it most useful, is the purification of foul drinking water, for which all other disinfectants with which I am acquainted are unavailable either on account of their poisonous nature or disagreeable odour.

Your obedient servant,

PONSONBY ADAIR,

Surgeon Superintendent of the ship "Royal Albert."

Mr. Condy, Battersea.

GOVERNMENT EMIGRATION BOARD,  
8, PARK STREET, WESTMINSTER, S.W.,  
November 12, 1861.

SIR, November 12, 1861.

I have to acknowledge your letter of the 15th ultimo, and in reply to state that the Commissioners have received an additional report from the Surgeon Superintendent of one of their emigrant ships, in which he speaks in highly favourable terms of Condy's Disinfecting Fluid, both as a general deodorizer and purifier of foul drinking water.

The Commissioners have accordingly authorized their Emigration Officers to place that preparation on the official list of medicines and other sanitary substances, sanctioned for use on board private passenger ships.

I am, Sir, your obedient servant,  
Mr. H. B. Condy. S. WALCOTT.

I am, Sir, your obedient servant,

S. WÄLCOTT.

LONDON, 28, FINSBURY CIRCUS, E.C.,  
*November 4, 1861.*

"Condy's Disinfecting Fluid" has been now for a considerable time tried on the medical deck at the Seamen's Hospital ship "Dreadnought," for ordinary disinfecting purposes, and, I may say, with unquestionable success. It has also been found, when duly diluted with water, to be of great service as a disinfecting and stimulating gargle in various affections of the mouth and throat.

STEPHEN H. WARD,  
Physician to the Seamen's Hospital "Dreadnought," &c.

## XXV.

## INVALUABLE IN THE CAUSE OF PUBLIC HEALTH.

The cause of Public Hygiene possesses in Condy's Fluid a most important agent, familiarity with whose effects, far from diminishing the belief in the advantages of ventilation and cleanliness, without which disinfection is of comparatively little avail, by demonstrating to the senses the remarkable purifying properties of naseent oxygen, inculcates in the minds of those who use it, a more than ordinary appreciation of the value of those essentials of health. As an auxiliary to ventilation, due water supply and adequate drainage, the artificial ozone of Condy's Fluid, brought to bear, in a systematic manner, upon those numerous minor sources of impurity which, even under the most perfect sanitary arrangements, can never be altogether got rid of in towns and populous districts, would go far to reduce excessive rates of mortality by diminishing epidemic and contagious diseases, like cholera and malignant fevers, and those "catching" disorders of infancy, which we are too prone to consider to be affections necessarily incidental to childhood. No other article whatever is possessed of such available power in destroying all kinds of impurity, neutralizing every variety of uncleanness, and preventing and mitigating many of the worst forms of diseases, as Condy's Patent Fluid.

The above favourable results are extracted from my notes of "Experiments made on Disinfecting Agents," and they are such as quite convince me of the superiority of "Condy's Fluid" over all other disinfectants, and as such I shall continue to recommend it.

In my official capacity, I have ordered its use in this district in houses that were infested with fever, &c., and in others that were impregnated with foul smells, and in drains during cleansing, alteration, and repairs, and in cesspools previous to being cleansed, and it has always proved most satisfactory.

I have recommended its use to butchers, fishmongers, rag and bone merchants, and marine store dealers of the parish, who have adopted its use, and are much pleased with its efficacy.

I consider it a most valuable sanitary agent, and one that ought to be used extensively in all populous neighbourhoods.

JAMES H. MORGAN,  
Sanitary Inspector of St. James's, Westminster,

3, THREADNEEDLE STREET, E.C., LONDON,

August 1, 1858.

SIR,

I have used your Disinfecting and Deodorizing Fluid for some time in my business ; and during the present hot summer have found great advantage from sprinkling my premises three or four times a-day with it, diluted in spring water. It keeps the shop clean and sweet, and I really believe thus restrains the decomposition of meat.

I am, dear Sir,

Your very obedient servant,

JOHN BANISTER,

Purveyor to Her Majesty.

H. B. Condy, Esq.

WORMWOOD STREET,

SIR,

July 7, 1858.

I find your Fluid to answer admirably, and would recommend all butchers to use it, both in the slaughter-houses and about the premises, as it tends to keep the place sweet.

W. MOSS.

DEAR SIR,

RYE LANE, PECKHAM.

I have used your Disinfecting Fluid, and find it answers the purpose of purifying the atmosphere of my shop, and retarding decomposition.

Mr. H. Condy.

JOHN BROWNE.

SIR,

LIVERPOOL, November 17, 1857.

According to your instructions, I have made experiments with "Condy's Patent Disinfecting Fluid." I have tried it in the proportions of about two ounces of the fluid to four gallons of water, in the urinals in Lower Castle Street, in that by the Fish Market, and in another that had been left unwashed for the purpose of the experiment, and the result was a complete removal of the offensive odour. I also made a trial of it, mixed in the same proportions, on some bad fish, from which it also removed the disgusting smell.

I am, Sir, your obedient servant,

James Newland, Esq., E.C.,  
Borough Engineer.JOHN PARSONS,  
Inspector of Scavengers.

"Condy's Fluid was first recommended to me by my friend the late Mr. Lindsey Blyth, analytical chemist to the Board of Health, in the summer of 1857. I witnessed and assisted him in some experiments on sewage matters with Condy's Fluid; the deodorization was perfect, and its disinfecting qualities must certainly be recognized as admirable, for it destroys all organic matter undergoing the putrefactive process; it burns it up and leaves nothing more to putrefy."—Mr. G. P. Girdwood, M.R.C.S., on Disinfectants.—*The Field*, March 23, 1861.

SIR,

I had been invited to see the use of Condyl's Fluid on a large scale. There is a good-sized pond on a gentleman's premises, near Princes-gate, just beyond Knightsbridge Barracks. The pond has not been cleaned out for twenty years, and the accumulation of filthy mud, rotten leaves, &c., has of late rendered its presence most disagreeable. I found Mr. Condyl and his men deluging this stinking mud (after the water had been drawn off) with a jet of disinfecting fluid from a fire-engine, and the effect was wonderful; as the men carted away the filthy mud hardly any smell at all was to be perceived. As each stratum of mud was removed, a fresh dose was pumped on, and the work proceeded without that horrible smell so peculiar to decayed vegetable matter.

F. T. BUCKLAND,  
Assistant-Surgeon, 2nd Life Guards.

*The Field, March 23, 1861.*

KINGSTON HOUSE, KNIGHTSBRIDGE, LONDON,  
March 24, 1861.

I hereby certify, that the lake or pond, 300 feet long by 70 feet wide, in these grounds, and which had not been emptied for 20 years, was completely cured by the use of Condyl's Patent Disinfecting Fluid, without causing any nuisance to the mansion or neighbourhood, although the water contained in it was very foul, owing to the drains from the kitchen and offices flowing into it at the rate of 300 gallons a-day.

JOHN READY,  
Head Gardener to Lord Listowel.

“ So great is the stench, that the artificial ozone of Condyl's Fluid has had to be brought into requisition, and has greatly purified the neighbourhood.”—Account of the great fire at London Bridge.—*Daily Telegraph*, July 2, 1861.

CRAYFORD RECTORY,  
November 13, 1861.

SIR,

I have much pleasure in testifying to the efficacy of Condyl's Fluid as a disinfectant. The soil in my church, to the depth of many feet below the floor, was a mass of corruption. Condyl's Fluid and Powder were used as far as was practicable, and always with entire success.

I am, yours faithfully,  
Mr. Condyl.

H. MORLAND AUSTEN.

“ Although we are here urging a fair trial for the soil itself as a great natural deodorizer, we are quite alive to the possibility—nay, we had almost said the probability,—of some artificial deodorizer being after all found absolutely necessary in the disposal of town sewage, whether over the land or not. But either way it will be right

to keep in view that another great natural deodorizer besides the soil is ozone, whether in the air or the earth, and whether naturally or artificially applied. It is this same agency that is known as "Condy's Fluid," and with which some successful experiments we recollect were some time since made on the metropolitan sewage. This, too, is the air test used at Manchester, and so much recommended by Miss Nightingale and others; and it is a test for purity in water as well as air."—*The Builder*, Dec. 8, 1860.

"The deodorizing and disinfecting properties of this substance [permanganate of potash] are such as to render absolutely inoffensive the fecal matters with which it comes in contact, so that they may be removed with the same facility and absence of discomfort as any ordinary house sweepings."—Dr. Henry McCormac on pipe drainage and close carts.—*Builder*, Oct. 19, 1861.

56, CURZON STREET, MAYFAIR,  
August 26, 1858.

A trial of "Condy's Fluid" has convinced me that it is really what it professes to be, viz.:—not only a deodorant, but a disinfectant. I entertain no doubt whatever, that it will prove to the profession a most valuable auxiliary, both in the prevention and management of many diseases.

A. B. MADDOCK, M.D.,  
Author of *Treatises on Diseases of the Chest  
and Nervous Systems.*

23, SUFFOLK STREET, PALL MALL,  
May 10, 1859.

I have great pleasure in bearing testimony to the efficacy of "Condy's Fluid" as a general disinfectant, and believe it also to be invaluable as a preventive agent.

F. R. HOUGHTON, M.R.C.S.E. & L.S.A.

"I may add, in conclusion, that I do not offer these remarks with the view of prejudging the enquiry at St. John's Wood. My principal object in writing them, is to avail myself of the opportunity they afford of earnestly recommending the general adoption of some very simple measures which I have long been in the practice of employing for checking the spread of typhoid fever, and by whose means, provided they are thoroughly and effectually carried out, I believe the recurrence of such calamities may be entirely prevented. These measures are founded on the power of chemical agents to destroy the infectious properties of contagious poisons. If it be certain that the intestinal discharges in this fever are the principal means of propagating the disease, it is no less certain that by subjecting the discharges on their issue from the body to the action of powerful disinfectants, they may be entirely deprived of this property."—Dr. Wm. Budd on Typhoid Fever; *Lancet*, Dec. 6, 1856.

“PERMANGANATES OF POTASH AND SODA.—These substances are powerful oxidizers. They are sold under the name of Condy’s Disinfecting Fluid, and are exceedingly useful where solid or liquid infectious matters have to be dealt with. They speedily render the matter of cesspools, drains, and sewers perfectly innoxious. They may also be employed for the purification of water, and by their action on organic matters, can be used as tests for the purity of water.”—English Cyclopaedia, by Charles Knight, ed. 1860; Division, *Arts and Sciences*; Article INFECTION.

“In the surpassing importance of pure air and pure drinking water as conditions of health, we are, I suppose, all agreed. For my own part, I will not yield to the most ardent sanitarian in my zeal for these great safeguards. But, for the emergency of actual fever, I have specific measures to propose, which come nearer to the root of the evil. By treating the intestinal discharges, and everything imbued with them (including the hands of attendants on the sick), with proper disinfectants, I endeavour to stay the spread of the malady by destroying the very seed from which it springs.

Not theory only, but actual experience,—extending now over nearly twenty years,—has satisfied me of the sovereign efficacy of this mode of prevention. Were it universally practised, with the skill and intelligence which such a proceeding requires, I will venture to say that the cases of typhoid fever in England, which average now about a hundred and fifty thousand annually, with fifteen or twenty thousand deaths, would soon be cut down to a very low figure.”—Dr Budd, of Clifton, on the Propagation of Typhoid Fever; *Lancet*, Nov. 30, 1861.

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*By the same Author.*

AIR AND WATER:  
THEIR IMPURITIES AND PURIFICATION.

---

*Preparing for Publication.*

SUR LES  
PROPRIÉTÉS DÉSINFECTANTES ET THÉRAPEUTIQUES  
DES  
PERMANGANATES ALCALINS.